MACHINEGUN

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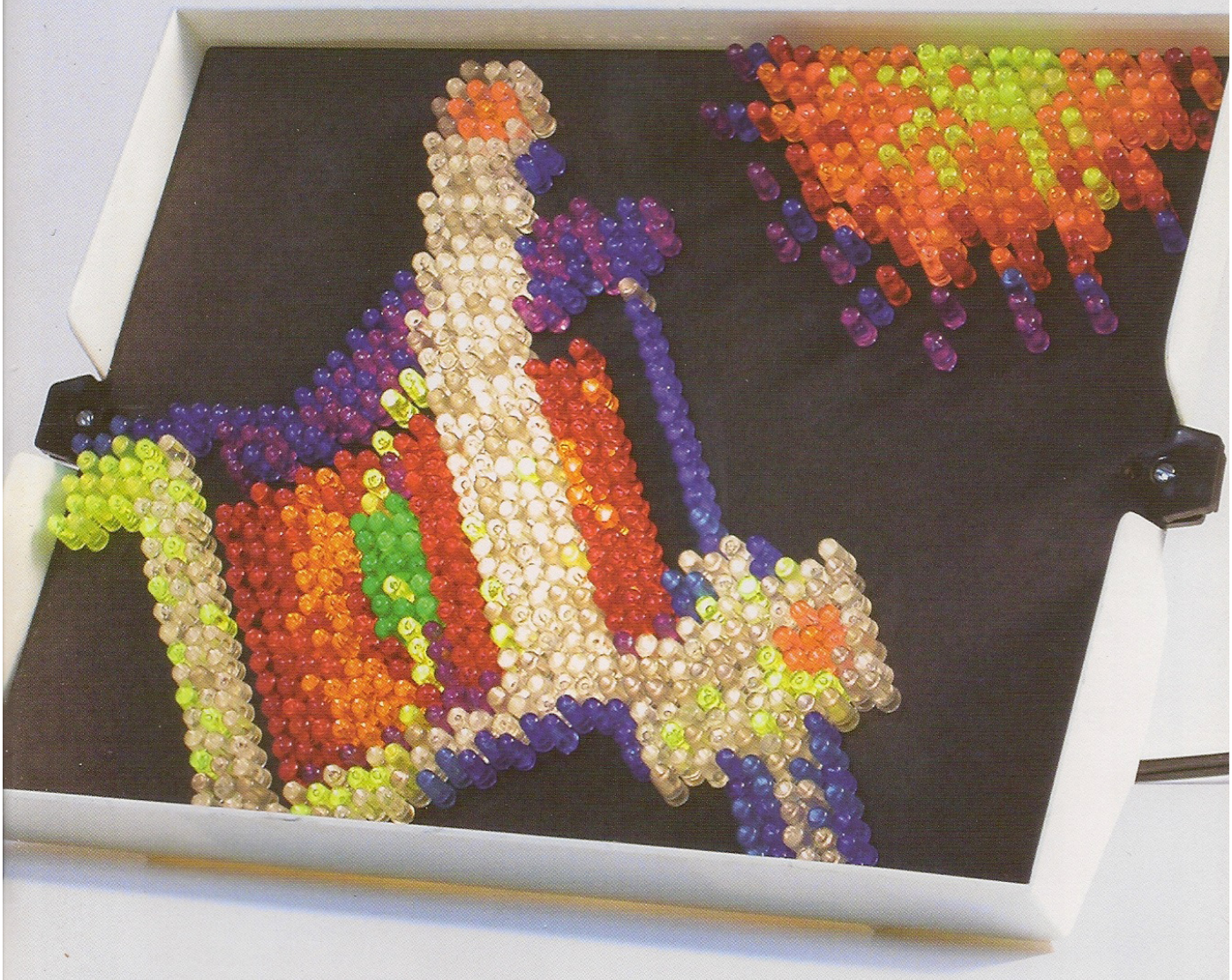

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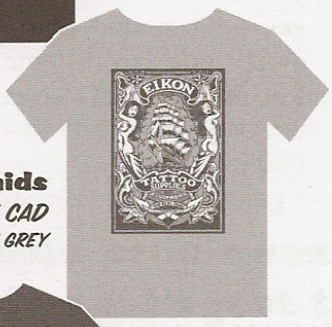

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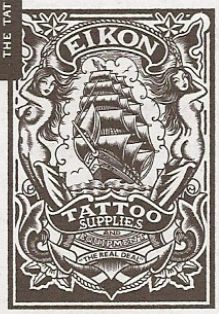

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MACHINEGUN Magazine
THE TATTOO MACHINE BIBLE

ISSUE NUMBER 5 • AUGUST 2004

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Tattoos aren't for everyone... they're too good for most people.

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EDITORIAL

BY BILL BAKER

Sooner or later, you're going to encounter a tattooer who will tell you that tattooing is going to hell. They will tell you all the bad things they've heard about every pigment, product and person in the business. Probably none of it will be true – but they'll tell you, goddammit, that it is and they know because so and so said so.

Stupid people sometimes say stupid stuff; that's just the way they are. If you can ignore *what* they're saying and consider *why* they're saying it, you will see that on some level they are trying to protect tattooing – protect it from bad pigment, bad suppliers and bad people who want to start tattooing. On that level, what they're doing is admirable. Even if they don't know what they are talking about, their motivation is sincere.

Stupid people sometimes say stupid stuff; that's just the way they are.

The challenge is to interpret what they are saying. If it doesn't make sense, do all of us a favor and don't repeat it. If what they say makes some sense, don't just take their word for it; try to find out the truth for yourself.

Tattooing is worth protecting, and everyone involved in it should do their part, at their own level.

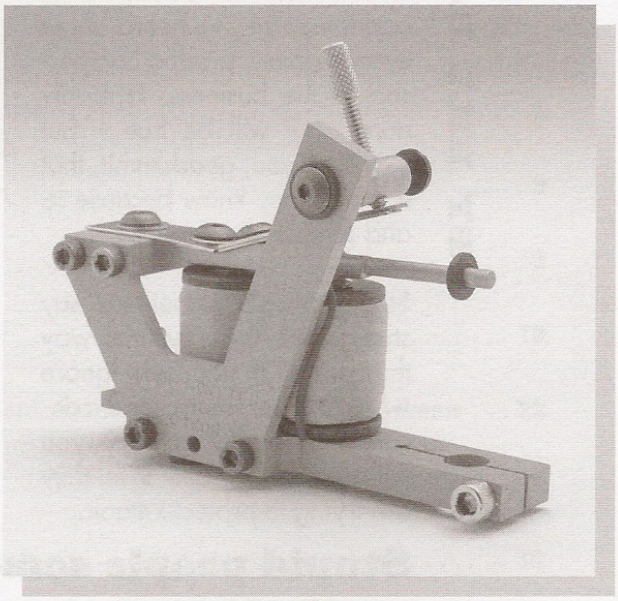
If you're a dummy and you don't know much, you can go on and on, talking about things you'll never understand, making no sense, just repeating things you've heard. If that's where you're at, good for you! You'll be doing something to protect tattooing.

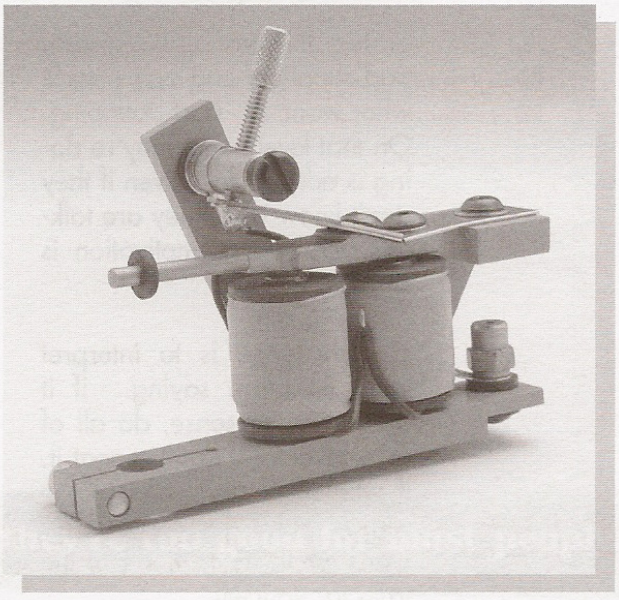
If you're a bit smarter, maybe you can figure some things out, and let people know about them. That will help protect tattooing.

The best and the brightest of the trade, well, they always lead by example. They're the ones who are more concerned with tattooing than whether or not they personally are the center of attention. They do good work, run good shops and support what's good in tattooing. More importantly, they do not support things that are bad for tattooing. Those are the tattoo artists to look up to. If you really want to protect tattooing, that's the kind of tattoo artist you should aspire to be. MGM

green monster

It took a lot to get the Green Monster to run over 300 Hz, but we did it. We actually got it to run 345 Hz. You couldn't tattoo with a machine running at that speed... well, maybe you could, but you shouldn't. It's just too fast for tattooing.



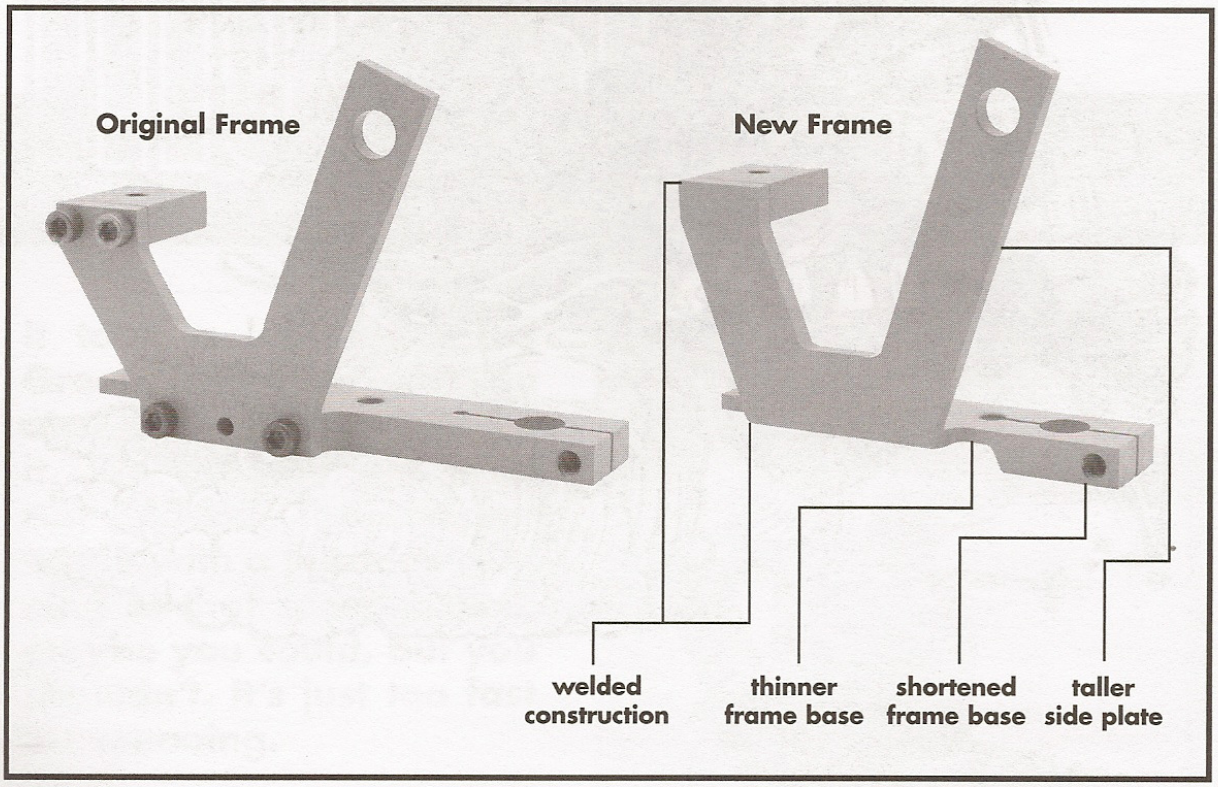


When we set out to build the Green Monster, we had two objectives: to create maximum speed, and to maintain a proper working stroke length. Sounds simple enough, but to meet those objectives, we had to push everything about that machine to the limit. The mechanical set-up was extreme, with two front springs stacked together to give a total front spring thickness of 0.060". The frame geometry was altered by extending the frame base and moving the tube vise forward. This created a usable stroke length from a very small air gap. Now we are going to apply what we've learned from the Green Monster to machine set-ups that would be used in everyday tattooing.

There are some fundamental principles that govern machine set-up. First and foremost, you must understand how a tattoo machine works before you can begin to adjust it to better suit how you tattoo. Secondly, you must be able to describe how a machine is running. If you cannot accurately describe how a machine is running, you will not be able to accurately identify any changes that you make to how that machine runs. How a machine runs is described by two factors: the speed of the machine, and the force the machine has.

The first step in setting up a machine is always the same; you must determine how you want the machine to run. Next, you must identify what condition the machine is in before you begin. Once you know these two things, you will have a starting point and a desired outcome. Then you can begin to make decisions about what must be done to make the machine run the way you want. As a general rule of thumb, a liner runs faster than a coloring machine, and a black and grey shader runs at a speed somewhere between the two. Required force is generally linked to the needle configuration being used. The number of needles in a configuration and the diameter of those needles determines the required force of a machine. Most tattoo artists would agree that you need at least four machines, each with a different set-up, to tattoo efficiently. Before we get into setting up machines, there are some changes that must be made to the Green Monster frame.

Green Monster Frame Alterations



Like the original, the new Green Monster machines that we are going to build will have pre-fab frames. Instead of assembling with screws, the frame components will be welded together. Welded construction is faster to build than drilling, tapping and assembling the frame with screws.

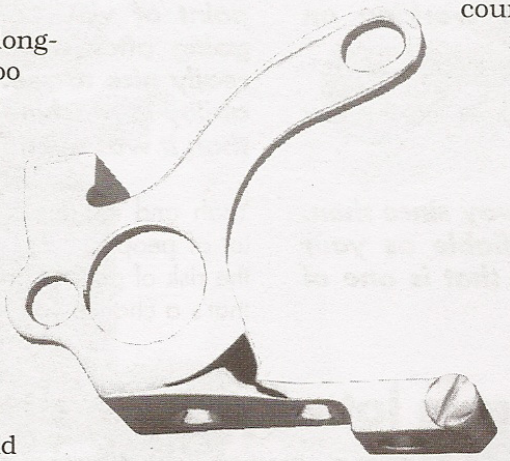
All four machines will have the same frame geometry. The coils will be a standard 1 1/4" tall. We will move the tube vise back to the coils and shorten the frame base. Frame geometry establishes the length of the springs. By utilizing the same geometry on all four machines, it will be easier to compare the effect that different components have on machine function.

In the next issue we will focus on how to set up four machines, each with a different purpose. We will choose the components that are needed on each machine and examine how to control speed, stroke length and force on a small configuration liner, a big configuration liner, a black and grey shader and a coloring machine. MGM

POPULAR MISCONCEPTIONS ...IN Tattooing

THE JOHNNY WALKER FRAME

For decades, the origin of the design of the Spaulding Supreme tattoo machine has been disputed. Many tattoo artists believe that style of machine frame was originally built by Johnny Walker. In some circles, any Supreme style frame is referred to as a Walker or Johnny Walker frame.



Johnny Walker worked alongside many important tattoo artists throughout his career, picking up trade secrets and machine knowledge along the way. In an interview, Johnny Walker said that he had heard that Huck Spaulding had "stolen" a machine design from him. He said he looked through the Spaulding catalog and did not believe Huck had taken anything from him, and certainly had not taken the Supreme. Johnny said that the only machine that Spaulding sold that was anything like one of his was the Spaulding Lightweight. Johnny had been working on making a machine lighter by filing material off of a standard upright frame, making it smaller and thinner. He had even taken a couple of wraps of wire off of the coils to lighten his machine more. There is a documented Johnny Walker modified frame in the collection of the Paul Rogers Tattoo Research Center in Berkeley, California. That Johnny Walker frame is definitely very similar in appearance to a Spaulding Lightweight.

The reasons that this popular misconception persists are as interesting as the story itself. Based on numbers sold, the Supreme would have to be considered the most popular tattoo machine in history. The basic frame shape and geometry of the Supreme has been copied by machine builders countless times, yet credit is rarely given to Spaulding even when the influence is obvious. Some machine builders actually bought Supreme frames from Spaulding and built their own machines in those frames. The Paul Rogers Mad Bee and the early Mike Malone Rollomatic were two of the most notable of that style of custom machine built in a Spaulding frame.

Although the rumor about Spaulding basing one of his frame styles on a Johnny Walker machine may have had an element of truth to it, the idea that the Spaulding Lightweight was actually a Johnny Walker was hard for many tattoo artists to accept. The Lightweight was considered a machine for a beginner, and Johnny Walker was a hardened, old school tattoo artist, well-known for his American values and military style of tattooing. Spaulding's top-of-the-line Supreme fit the story better, so it became the machine attributed to Johnny Walker and the rumour stuck. MGM

An Interview with...

JOHN MONIZ

MPIRE TATTOO MACHINES

Function and innovation *are the driving* forces behind *the machine building* of John Moniz, *but he has tempered* them with a rare *balance of form* and tradition.

Bill Baker: How long have you been tattooing?

John Moniz: I have been tattooing professionally full-time since 1996. I worked part-time at the same shop for a couple years prior with some scratching before that.

When did you first start working on machines?

Around '91-'92 I made a blow dryer motor rotary so I could tattoo myself.

Well you've come a long way since then. Your stuff is really identifiable as your own, in machine building that is one of the biggest challenges.

know a ton about it. All you do is reverse-engineer someone else's machine.

Whether or not anyone wants to challenge you about what you do or do not know, they certainly should be able to see that you're thinking in your own way. You're going through the process from your own point of view, and it's unique, not just going after what someone else did. It's really nice to see. In general, the level of ability in machine building is much higher than it was even five years ago.

Yeah and it's due to the openness shown by a lot of people. Every time I open my mouth I run the risk of giving someone an edge over me, but that's a chance you have to take. You have to be

It does seem like a lot of people are just copying tried and true designs and theories.

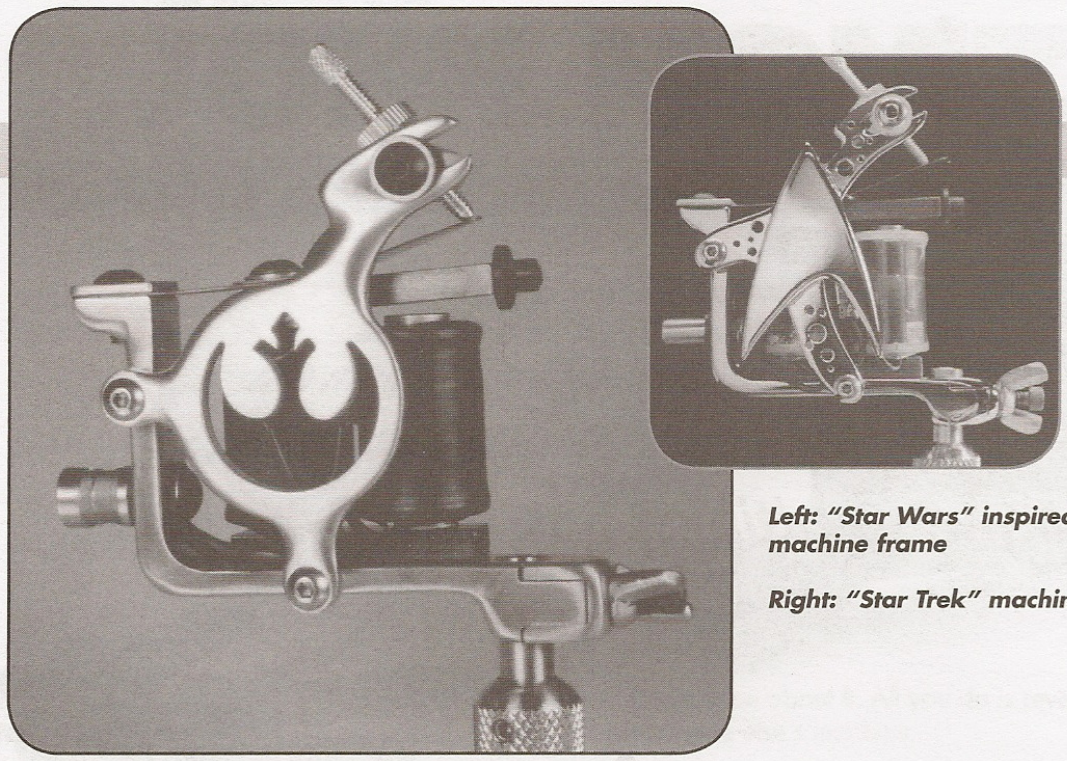
Especially in the last few years when there's been such a proliferation of machine builders. It does seem like a lot of people are just copying tried and true designs and theories.

It's pretty shocking how little some guys who present themselves as machine builders actually know.

I don't profess to know everything about it, but yeah, there are a lot of people who realize that you can make a doorbell and you don't have to

confident of your own product, just like tattooing. I'm not going to steer someone the wrong way with tattooing, I just have to make sure that I continue on the path that I've always been on. I think the fact is, that I started making machines based on designs that I knew could hold coils and springs and that's it. I didn't dissect a whole bunch of other things. I started with some machines and took some measurements and made some averages, but I didn't delve deep into the history, so I didn't know who was a good machine maker and therefore didn't know who to copy. Once I was

Four views of the John Moniz Shifter.



Left: "Star Wars" inspired Wedge machine frame

Right: "Star Trek" machine frame

up and running, I was more concerned with my own things than going back and trying to copy. I didn't have a lot of time to go back just for the leisure of it and find out who these men were and what they made. It comes in dribs and drabs as I go through this job, but yeah, I don't know much about it. I didn't read the book about Paul Rogers' life because I was busy doing what needed to be done as I've been unfolding this whole thing. So sometimes I feel a little deficient in that way and a little like maybe I'm not paying enough homage to the people who went before.

Maybe, I don't know... one nice thing is that information is in no grave danger of being lost, so it's there and it's accessible if people want it.

I do try to learn about it now, but for me it was more about finding my way rather than looking to someone else to find it. I didn't think to look to someone else because I think innovation is good. I just don't find the value in looking at someone else and tracing their steps exactly. There is something to be said for tried and true geometry and some devices that people have used, but I'm finding that out in a backwards manner now.

Once you've kind of established what you're able to do and where you are going to go with it, you can kind of look back and say, "This is a little bit of somebody else's influence mixed in here too." I think that can expand it, but if you just start with that your own view is watered down right from day one.

Every time I open my mouth I run the risk of giving someone an edge over me, but that's a chance you have to take.

Yeah, then you're just trying to put a little bit of your own spice on someone else's machine. I would never have involved myself in that because there are plenty of competent machine makers out there I could have just bought from. It was more about me, and this sounds a bit grandiose, but it was more about me making something that wasn't available. I had some ideas and some of them were turkeys and some of them were pretty good.

You said you started with a rotary. Did you have to go through a lot when you switched over to a dual-coil machine?

Yeah, but because I was learning, I hadn't been tattooing with a rotary for years and had to get used to something new. It was just a matter of getting used to poking my leg and having it hurt. Whether it was done with coils or a rotary it didn't really matter. I think it's stupid to rule something out just because it hasn't been done. I think that having a machine like a rotary adds one more type of machine into the mix for people who would prefer that. I believe it's good for all things to exist, but I think that a rotary machine, by its nature, just can't compete with the many functions of a coil machine.

I think it's stupid to rule something out just because it hasn't been done.

I think that the oscillating relay, the dual coil machine that we're all so familiar with, is really almost a perfect tool for tattooing if it's tuned, adjusted and set up properly... and therein lies the problem.

And you are dealing with people who have no idea, just like I didn't early on.

... and I certainly didn't.

It is such a puzzling thing. I don't know how your first machines were, but the ones I made totally *looked* like machines... but that was about it.

I was so limited, really I spent years just trying to tune up my machines. I swear probably five years of tuning them up, and finally I devised a system that involved heating up the back spring with a propane torch until it was cherry red and letting it cool, more or less annealing it in an attempt to soften the spring for some reason, I don't know, I had no idea what I was doing.

You knew that if you went to such an extreme degree, like taking a torch to something, that at least you're doing *something*.

Worst of all, I didn't have many machines when I first started, so if I worked on my machines it was usually after work. In those days we only worked until six o'clock, which was really a luxury, and I would start working on my machines and think I'm just going to spend an hour here fiddling around before tomorrow. By ten o'clock I'd be ordering the pizza and sweating, thinking I'm not going to be able to put that job on tomorrow if I don't get this thing back together and working.

It's like having one car, and it's your project car and it's like five o'clock on Sunday afternoon and all the parts shops are closed and you really need to get to work on Monday morning. That's why I did the opposite... I *didn't* fuck with my machines, I made other machines.

What was the first really good running machine that you had?

The first *real* machine I got was an English machine. It was a Ronnie Starr liner that I bought at the Mad Hatters Convention. That machine knew more about itself than I did, so I really had no business fooling around with it.

Did you try to get any other machines to run like that machine?

I made a couple of machines, kind of using the Ronnie Starr machine as a guide, but wasn't even sure what I was supposed to be paying attention to, so in essence they looked like tattoo machines but ran less than satisfactorily. I made the frames from thin brass that I drilled and bent. I filled them with Spaulding coils and probably armature bar and springs too. I mean I *was* able to tattoo with them, but they got hot and required more voltage to run.

What motivated you to build the first frame you ever made?

I was sure that I could make at least the frame part, little did I know. I wasn't sure about the coils and springs, but I figured I could bend some metal or cut some Plexiglas and then I'd have a tattoo machine for less than I could buy one for. I wasn't able to afford much in the way of tattoo equipment at that time as I was working a factory job and trying to support my family.

Did you copy the geometry from another frame?

Eventually, I had collected some machines from different companies, some crappy, some not as crappy. I looked at them all and took measurements and compared the measurements to get some average positions within the frame and went from there to graph paper to lay out the geometry.

What is the procedure for you now when you build a new frame? Do you work it out on paper first?

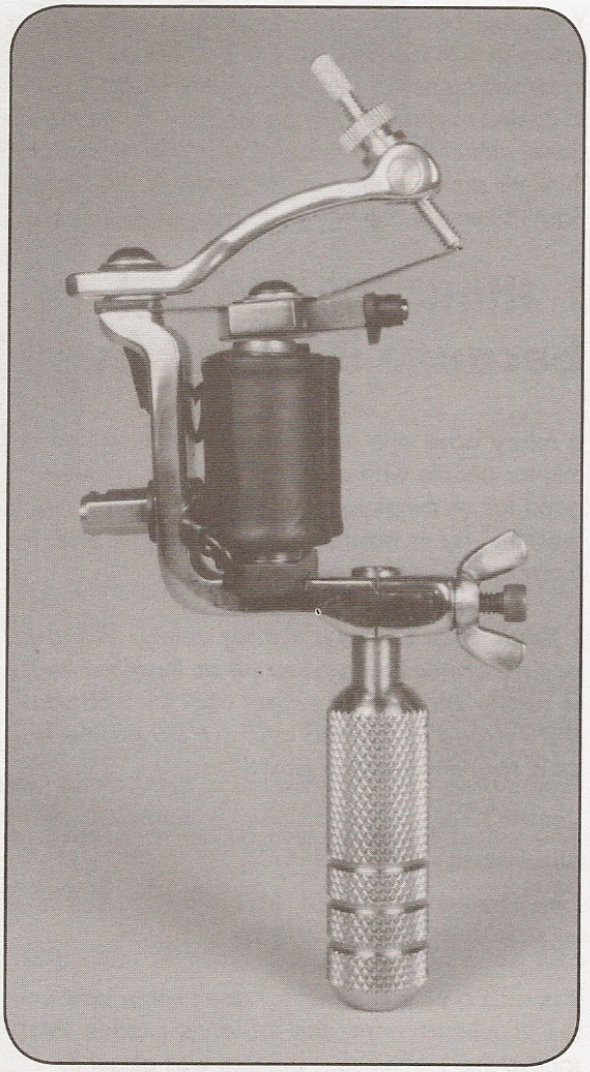
I very roughly work it out on paper to see the aesthetic aspect of it first. If it looks like it'll be a workable design, I move on to the graph paper and dial it in. I want to give some credit to Carson Vester. Early on I spent about a week down there with him in Texas. What I came away with was too much for me to absorb, but he spent all week with me at the tattoo shop with the machine shop in the back. He was very patient and took the time to show me stuff. It went over my head because I didn't know anything about machining and stuff like that. I took some notes, but basically what he showed me was that it is possible, it is doable. So he instilled, not intentionally because he wasn't trying to, but he fortified the notion that I *could* do this.

Is it true that you have a patent on that Shifter frame design?

Yeah, I do for that contact bar.

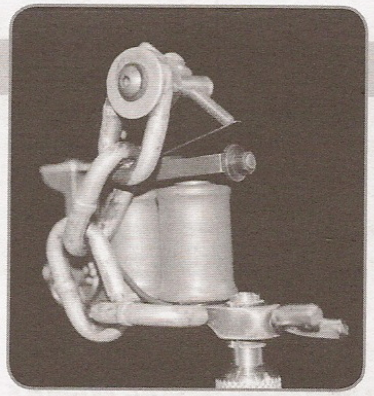
When did you get the patent?

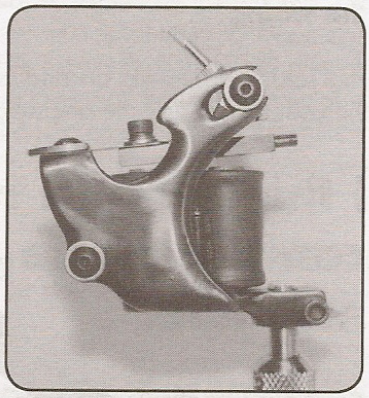
'99 or 2000. You can see it on the U.S. Patent Service website. I try not to say too much 'cause then people expect a lot from me in the intellect department.

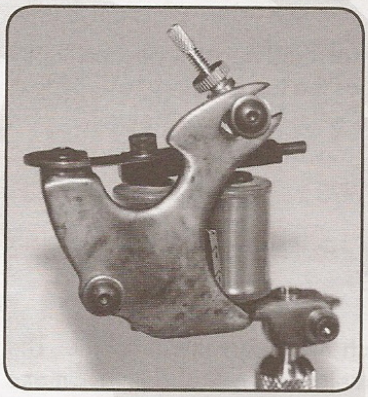


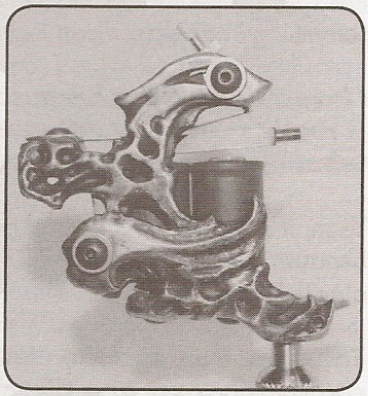
The Side-By-Side with patented contact bar.

From top to bottom: Chain, New Iron, New Brass and Sweep machine frames









Well, I'm impressed. If you have obtained a patent for any reason, then you've accomplished something most people never will.

It's good, but it's not the greatest thing. I had a guy infringe one time and he was selling stuff on eBay. It was all settled with a couple of emails. It was really cool to send someone a cease and desist email and have them kowtow.

Is the contact bar the same component on both the Shifter and the SXS? It looks like it's longer on the Shifter than on the SXS. Could you take the contact bar off of a SXS and put it on a Shifter? Will it fit?

You could do the reverse. You could take one off of a Shifter and put it on a SXS. The ones on the SXS get trimmed near the back end so they are actually a shorter length.

So it's a little shorter.

The profile, in its current incarnation is the exact same.

How is it insulated from the rest of the frame?

It's insulated from the back of the frame by a phenolic spring clamp and that's it.

So everything up at the contact point screw, that's all metal to metal?

Yeah, it's usually a brass insert that the contact screw goes through and the front of the contact bar is slotted so that when you loosen the thumb screw, the whole thing can pivot forward and backward on its own axis. That's why it's called The Shifter, because it looks like a shifter. The rear where it attaches to the spring shelf is slotted so you get a lot of adjustability. You can slide the whole thing forward or backwards, or you can just shift it.

So what about the screw that mounts the contact bar to the back spring mount, that's a metal screw?

Right: Independent, Chain Ring and Lost Wax Shader

Yes, that's insulated.

Is it insulated in the same way we would usually insulate the top binding post?

Yes.

Okay. It sure is a nice clean design. Where's the wiring?

The solder lug comes up and is trapped between the contact bar and the phenolic.

Instead of the Brass? It's the same casting?

No, the Brass was actually different. It just came out to be a lot of work and I don't charge enough for them. I've got a pocket yoke in there and think I made one or two of those and then switched over to a cast bronze version of it. The New Bronze and New Iron are staples. I love them.

Is the New Iron cast?

I think that a rotary machine, by its nature, just can't compete with the many functions of a coil machine.

So it's all at the back end?

Yes, it goes to the rear binding post and basically the contact bar acts as the top binding post. It looks really slick from one side, but there's plumbing on the other side. All machines have wiring; some hide it behind big side plates.

Do you have a preference between the SXS and the Shifter?

The Shifter is a much more versatile machine. The SXS, due to its geometry, is more of a liner. I make them as grey shading machines too, but it's not something I can slow down too much.

I love that machine because it's so quirky. It is really startlingly different in design than what most people are used to seeing.

Yeah, it seemed to get a lot of good response, and because of its functionality it's more than just a gimmick.

The New Iron and the New Brass, they're completely cast one piece frames. Is that right?

The New Brass ended up being more work and less satisfactory as a finished product than if I cast it in bronze, so I ended up making the bronze.

No, the Iron is fabricated. The Bronze is cast.

Two different means of manufacture, yet they're visually very similar.

Actually, the New Bronze is made from a New Iron frame, that's why they are so similar.

Well that would explain it. The Chain Ring and the Independent, are they one-offs?

Yeah.

The Lost Wax Shader is another one-off?

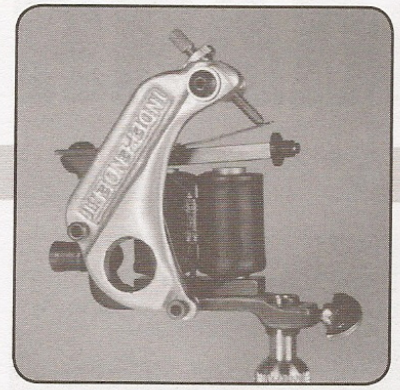
Yes.

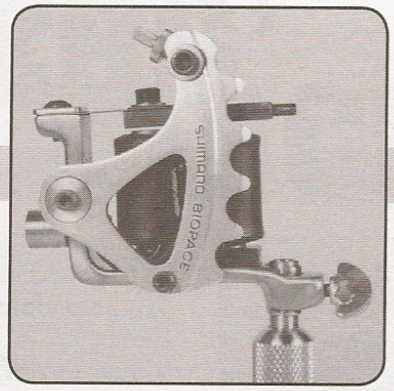
And the Chain?

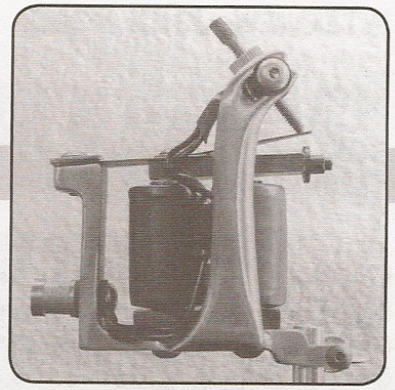
Yeah, I think I'm going to make a couple more of those. That was another one where I was very surprised that no one had done that.

The Sweep is a cast bronze? Does it look like that out of the mold?

Yes, it pretty much looks like that. It's cast and then I carve it a little bit more with a dremel, just to make some cuts that you couldn't do as well with machining. It's a little easier for me to have some things right angle-ish and flush. Then once it's all







machined I can go back in and take it to the bench grinder and cut off some of the edges and make some of the filigree work a little deeper.

It looks to me like the frame base and the back upright are the same on the Wedge and on a couple of your custom machines, and then a different side plate is affixed to it to make it stylistically different. I know it's not quite as simple as that because the side plates aren't all mounted in the same place.

No, it is that simple.

Is it? Well good, because you know I'm interested in this idea of interchangeable parts. So I wonder when it's not, I wonder why wouldn't those mounting screws be in the same place?

Interchangeability to me, means having that one "L" and then having the side plate mount where it needs to. I think its cheating enough to have that one "L".

I wouldn't consider that cheating, I would think that helps keep your parts costs down.

And the geometry lies within the "L", so there would be no altering it anyway. I had other side plates that I've discontinued. Early on I thought it was neat that they were different and cool looking and maybe appealed to a broader base of people. That was kind of important, you know, I wanted to put my machines in people's hands. Later on I realized, I don't care about flaming dice and I don't care about a flaming spade, those aren't me. That's fine; they are a lot of people, especially in tattooing. For another thing, they were a lot of work to shape and finish, so after a while I said I think there are enough machines on the market that are the shape of a black cat or a skull and crossbones. The kitschiness of what I was doing five years ago is flooding the market now.

Your machining and finishing skills are really obvious in the two-piece tube vise that you make.

Again, that's the kind of thing that I wish someone would make for me. I know my skills pale in comparison to an actual machinist's. I've just learned this over the last couple of years out of necessity, so I'm happy when I make something that I would buy. Also, I might buy that machine just because of the chuck, so I give myself some credit. It might just be rationalization because I spend so much time in the workshop.

I can appreciate purely utilitarian design; however, I don't particularly like the trend towards machines looking like they were just thrown together with no concern for fit or finish.

Some of your machines have a different tube vise. How come?

At the present time I don't use any of the split collet, but I do use what I call a split frame. That's when I saw straight through the chuck. All custom brass machines get that sliding-vice. I go through the extra trouble, but if I am trying to make some machines to bring to a show then I can't take the extra time that all that takes.

Do you get the sliding-vise parts cast as one unit?

I get the "L" shape and then the sliding part is a whole other piece of metal that I drill and mill and then I mill the "L" shape to be a tongue and groove type of thing. So there's a lot of extra work to making them. If someone calls me and I make them a machine over the course of a month or two, then they're a different kind of customer than someone who just picks up one of my machines at a show.

So some machines get one type of tube vise and others get another.

Yeah, material dictates some of that too. On a brass frame it's a lot easier for me to make the sliding jaw and on the iron frame I do the sawed frame.

Do you have a preference between iron and brass?

I like the compactness that iron gives, but I think I have less and less of a preference as time goes on. I like the ease of working with brass, plus brass just has a nice feel and sound as well. I like the whole idea of a brass frame - the isolated magnet.

Yeah, the magnetic circuit is completely isolated there with it's yoke. Do you use the same height of coils in an iron frame as you do in a brass frame?

Yeah, I use an 1 1/4" for everything.

So a brass machine is actually a little bit of a taller machine than an iron machine because of the yoke.

So that's the problem. I mean I stick with the 1 1/4" cores religiously, and that's where I have to sacrifice the frame being taller, and that's why I don't like the brass sometimes. It becomes a taller looking machine and I have my own aesthetic.

Have you got a standard diameter coil core that you use?

Three eighths... I use 1002 which is about as close to iron as you can get. I've gone to a lot of trouble to get that and put a little distance between the 1018 standard or 1020 and what I am using.

Three eighths core wrapped different on different machines, or always the same?

Always eight wrap.

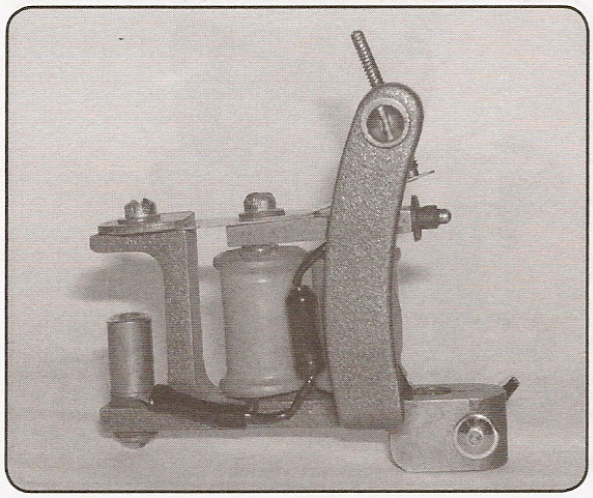
You don't use any decoration on the coil wraps, just heat shrink.

I work mostly from orders, if someone wants something then that's fine. If I'm going to a show, I might put pictures of something on the coils, but you run the risk of that not appealing to everyone. I can appreciate purely utilitarian design; however, I don't particularly like the trend towards machines looking like they were just thrown together with no concern for fit or finish. To each his own, but a handmade machine does not need to look like something that was hack sawed and blob welded. If someone's got a hacksaw and a welder, they've probably got a couple of files too - use 'em. The idea of quality was instilled in me by my father while I was growing up, and although I didn't think I was paying attention to him, I guess I was. We are craftsmen; making tools for other craftsmen... our work can and should reflect that.

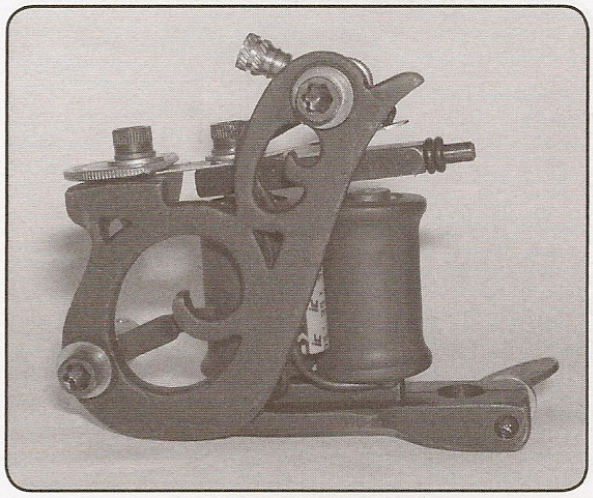
Have you got a website? How can people get a hold of you?

My website is www.mpiretattoo.com. Or they can call here, the workshop line is (401) 349-0548.
MGM

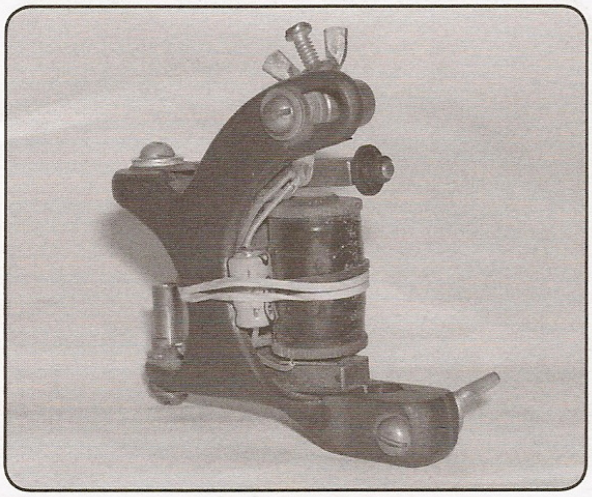
READERS' MACHINES



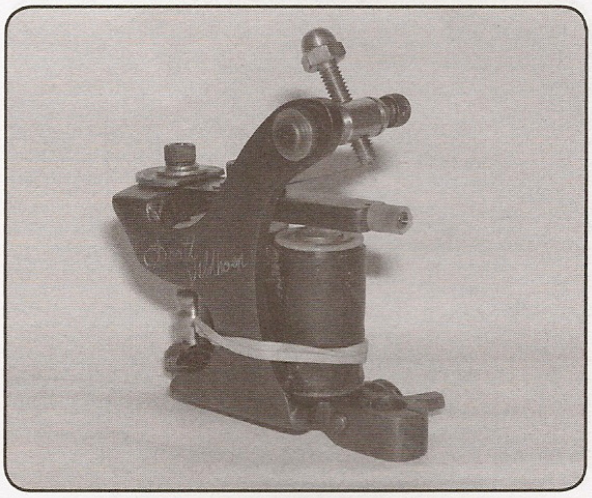
Adam Ciferri Bulldog



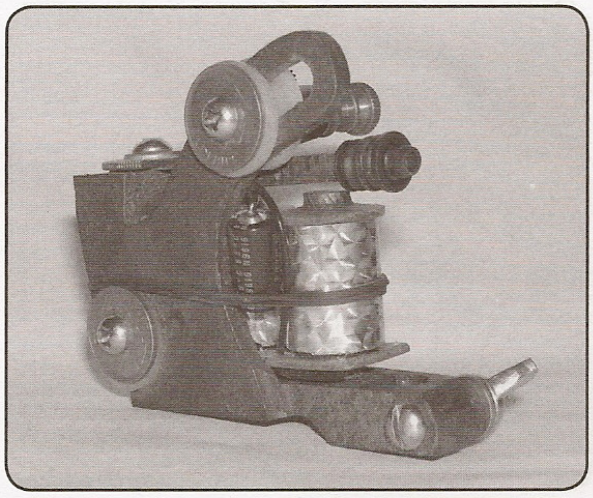
GRIME Little G



Juan Puente



Scott Veldhoen



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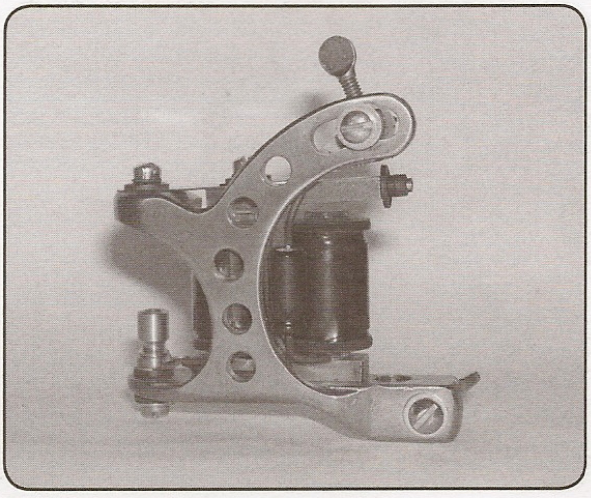
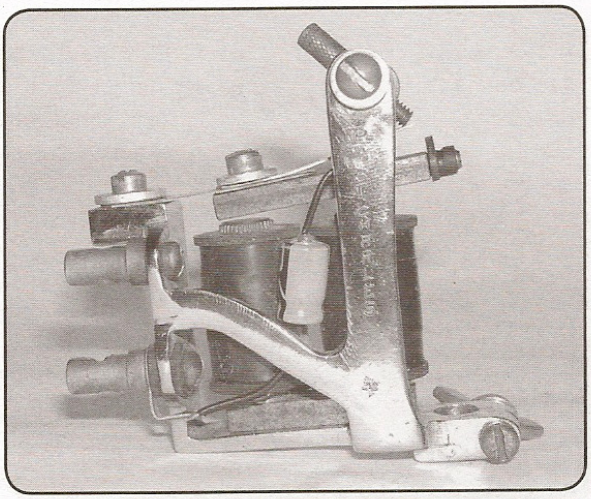
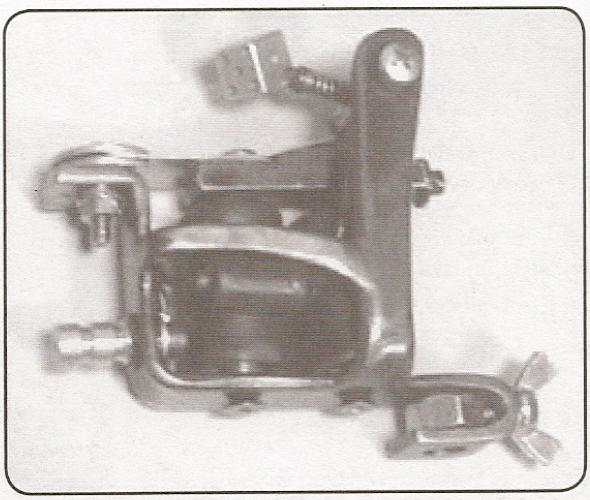


Juan Puente

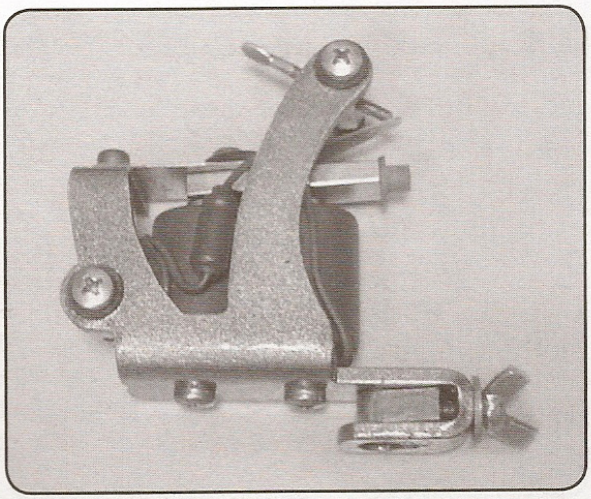
READERS' MACHINES



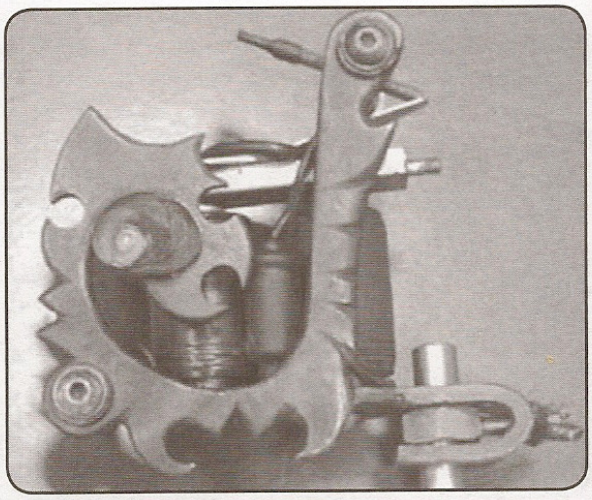
Jonesy Square Back



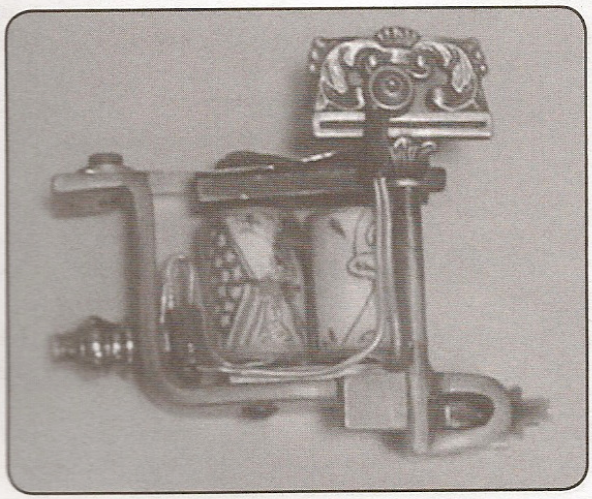
Renato Voglino Side Bar



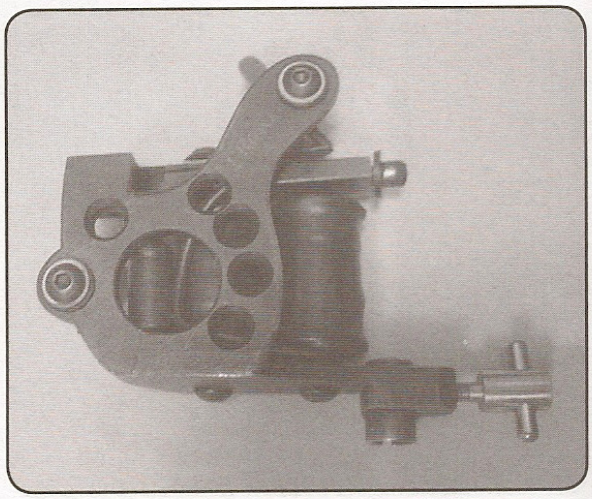
Micky Sharpz Hornet



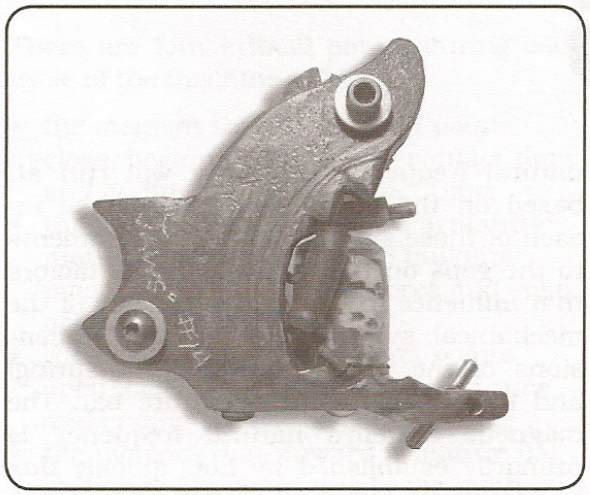
Renato Voglino Tribal Machine



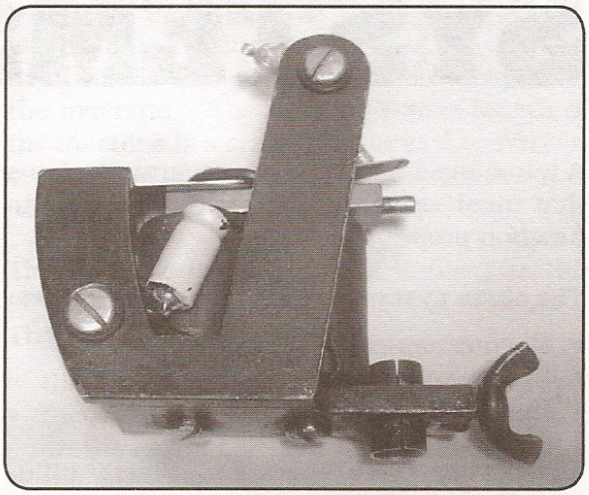
Renato Voglino Key Machine



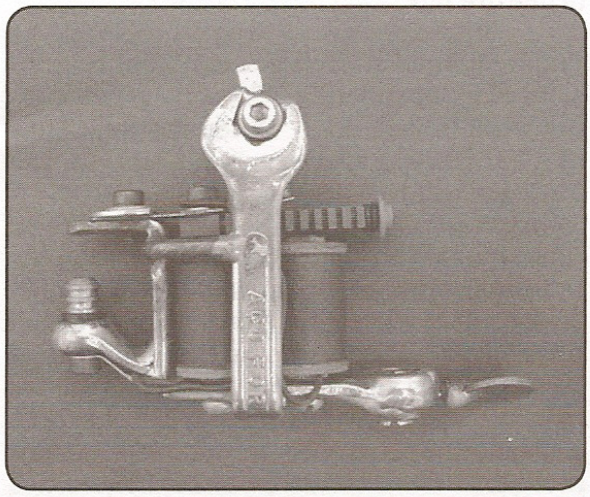
Micky Sharpz Microdial



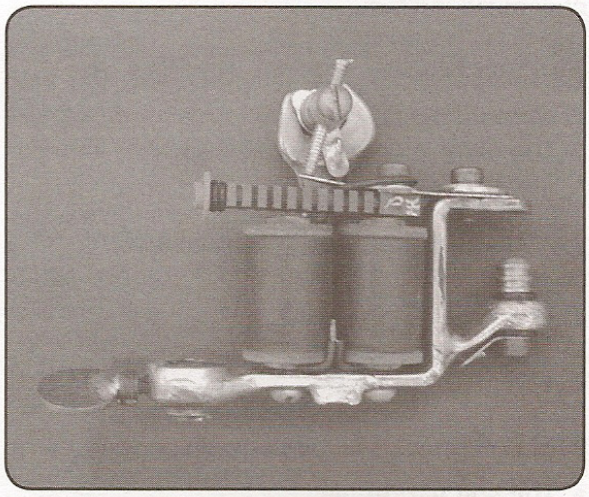
Chris Chrome



Mickey B Shader



Paulo Fernando



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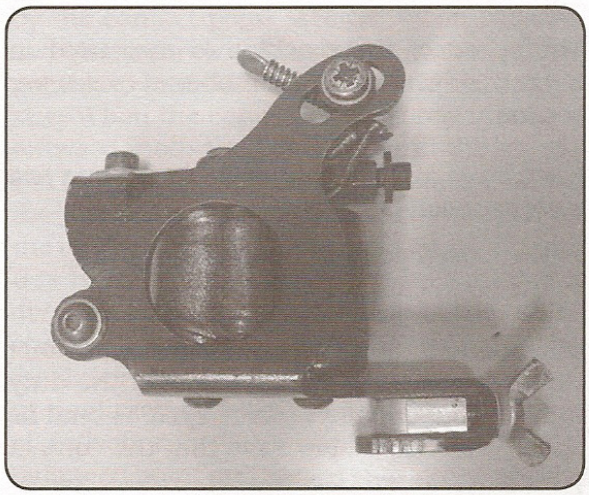
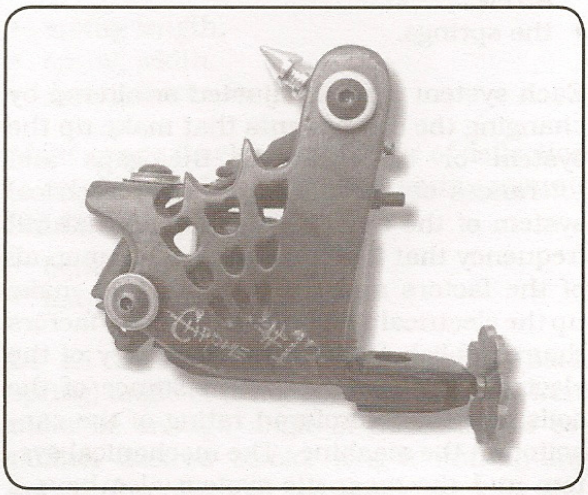


Micky Sharpz T-Dial



Chris Chrome

TATTOO MACHINE SYSTEMS

A tattoo machine has three separate systems that must work together for the machine to function properly.

The three systems of a tattoo machine are:

- the mechanical system;
- the magnetic system;
- the electrical system.

Each of the three systems is directly influenced by the other two. Any alteration to one system will affect the other two systems. All three systems must work together as a synchronized system.

The mechanical system consists of:

- the springs;
- the armature bar;
- the machine frame.

The magnetic system consists of:

- the coil cores;
- the yoke or frame base;
- the coil shims;
- the armature bar.

The electrical system consists of:

- the coil windings;
- the capacitor;
- the binding posts and contact point screw;
- the springs.

Each system can be adjusted or altered by changing the components that make up the system or by adjusting the gaps and tolerances on the machine. The electrical system of the machine will have a natural frequency that it will run at, based upon all of the factors and components that make up the electrical system. The primary factors that establish the natural frequency of the electrical system are the resistance of the coils and the microfarad rating of the capacitor on the machine. The mechanical system and the magnetic system also have a natural frequency that they will run at, based on the components that make up each of those systems and by adjustments to the gaps on the machine. The factors that influence the natural frequency of the mechanical system most are the dimensions of the timing spring (front spring) and the weight of the armature bar. The magnetic system's natural frequency is primarily established by how quickly flux builds in the coil cores and yoke or frame base, as well as how quickly the flux dissipates from those components and the armature bar.

The frequency of each system must be considered independently but each system does not work in isolation. When the frequency of all three systems are synchronized, the machine will run properly.

Attempts to alter the speed or function of the machine must be made with consideration of the effect those changes will have on all three of the machine's systems. Changing a factor in only one system will result in the machine's three systems being out of synchronization. There is an acceptable tolerance in regards to variance between the frequencies of the machine's three systems, but if the systems are too far out of synchronization, machine function will be compromised.

The speed of the machine is measured in hertz (Hz), which is the number of cycles per second.

Each cycle of the machine is divided into two major sections. They are:

- the closed contact time, or duration;
- the open contact time, or duration.

The relationship between the closed contact time and the open contact time is the duty cycle of the machine. Duty cycle is read as the percentage of one cycle that the contact points are closed.

There are four critical points during each cycle of the machine. They are:

- the moment that the contact points close, beginning the closed contact time and ending the open contact time;
- the moment that downward armature motion is imminent due to building magnetic flux in the coil cores and yoke, or base of the frame;
- the moment that the contact points open, beginning the open contact time and ending the closed contact time;
- the moment that upward armature bar motion is imminent due to the main spring (back spring) force overcoming the dissipating magnetic flux in the entire magnetic system of the machine.

There are two adjustable gaps on a tattoo machine. They are:

- the point gap;
- the air gap.

The point gap is the open distance between the contact point screw and the top surface of the timing spring (front spring), measured with the armature bar making contact with the front coil core.

The air gap is the open distance between the top of the front coil core and the bottom surface of the armature bar, measured when the machine is at rest.

The point gap and the air gap are adjusted by the contact point screw. When the contact point screw is turned inward, both the point gap and the air gap will be reduced in size. When the contact point screw is turned outward, both the point gap and the air gap will be increased in size. The adjustment of the contact point screw is made to balance the air gap and the point gap. At what point this harmonious balance will be achieved is determined by the relationship of the timing spring (front spring) and the main spring (back spring). Various spring combinations, in conjunction with the main spring angle of deflection, will result in different sizes of balanced point and air gaps. This variability is desirable because the size of the air gap determines the working stroke length of the machine. The working stroke length of the machine is a critical factor in the creation and control of the force that the machine has when it is running.

There are four factors that determine the power that is required to run a machine. They are:

- the resistance of the coils;
- the microfarad rating of the capacitor on the machine;
- the size of the air gap;
- the main spring (back spring) force that is present on the machine.

The amount of power that is made available to the machine determines how much magnetic flux the coils will generate. Increased power results in increased flux. Required power, in essence, is required flux.

The work required of the coils in a machine is to overcome the size of the air gap and the main spring (back spring) force, thereby causing the armature bar to move.

Main spring (back spring) force is made up of two factors. They are:

- dimensions of the spring;
- angle of deflection.

Spring dimensions are made up of three factors. They are:

- spring length;
- spring width;
- spring thickness.

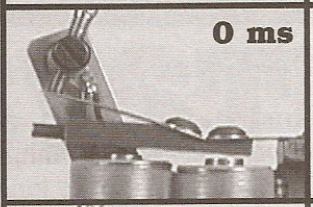
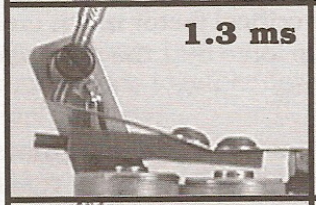
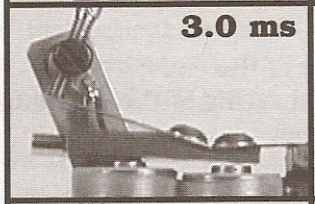
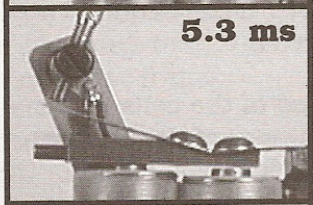
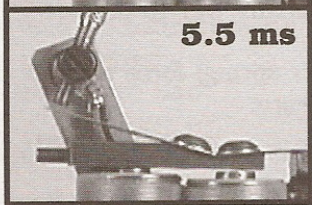
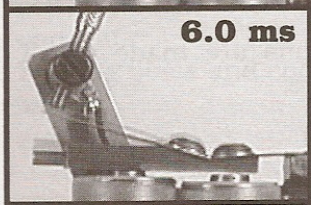
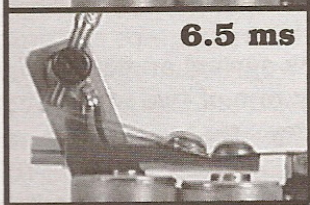
Main spring (back spring) angle of deflection is established by one of two spring mounting methods. They are:

- bent back spring
- flat back spring

Of all these factors, main spring (back spring) angle of deflection is critical. There must be enough angle of deflection to establish desired stroke length and timing spring (front spring) compression.

One Machine Cycle

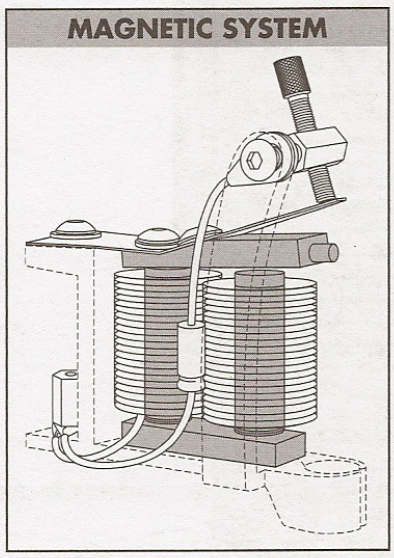
at 140 Hz, 43% Duty Cycle - Total Duration = 7 milliseconds

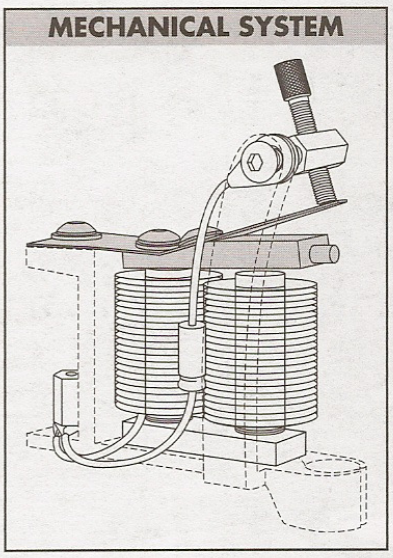
	Magnetic System	Mechanical System	Electrical System
 0 ms	Flux: maximum ↑ minimum	Energy in Main Spring: maximum ↓ minimum	Contact Points: closed / open
 1.3 ms	maximum ↑ minimum	maximum ↓ minimum	closed / open
 3.0 ms	maximum ↑ minimum	maximum ↑ minimum	closed / open
5.0 ms	maximum / minimum	maximum ↑ minimum	closed / open
 5.3 ms	maximum / minimum	maximum / minimum	closed / open
 5.5 ms	maximum ↓ minimum	maximum / minimum	closed / open
 6.0 ms	maximum ↓ minimum	maximum ↓ minimum	closed / open
 6.5 ms	maximum ↓ minimum	maximum ↓ minimum	closed / open
7 ms	maximum ↑ minimum	maximum ↓ minimum	closed / open

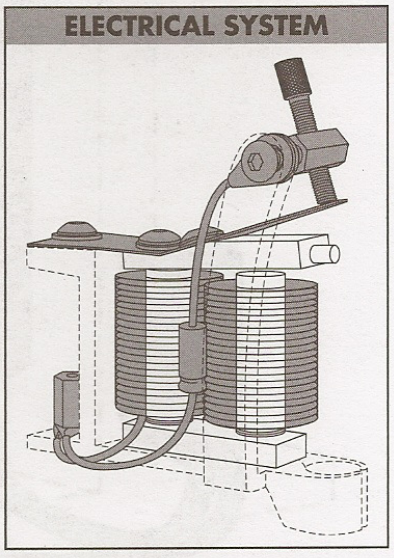
The interconnection of the machine's three systems is clear when considering required power. The electrical system initially determines the power required to generate adequate magnetic flux. The amount of flux required is determined by the resistance present in the mechanical system. Flux can build in the magnetic system until a maximum amount is reached, or the contact points open. It is desirable for maximum flux to be reached just before the contact points are open. If excessive power is applied to the machine, the opening of the contact points will be the only thing that stops flux from building. The objective is to have an efficient, but not excessive, amount of power present, with maximum flux being reached before the contact points open. If the size of the air gap or the main spring (back spring) force of a machine is increased, required power will be greater. An increase in power will create more magnetic flux. An increase in flux will extend the time it takes for the flux to dissipate from the entire magnetic system, which in turn would be overcome by the increased main spring force. Throughout each cycle, there are many interactions between the machine's three systems.

The objective of any proper machine set-up is to achieve synchronization of the machine's three systems, while controlling the machine's speed and force.

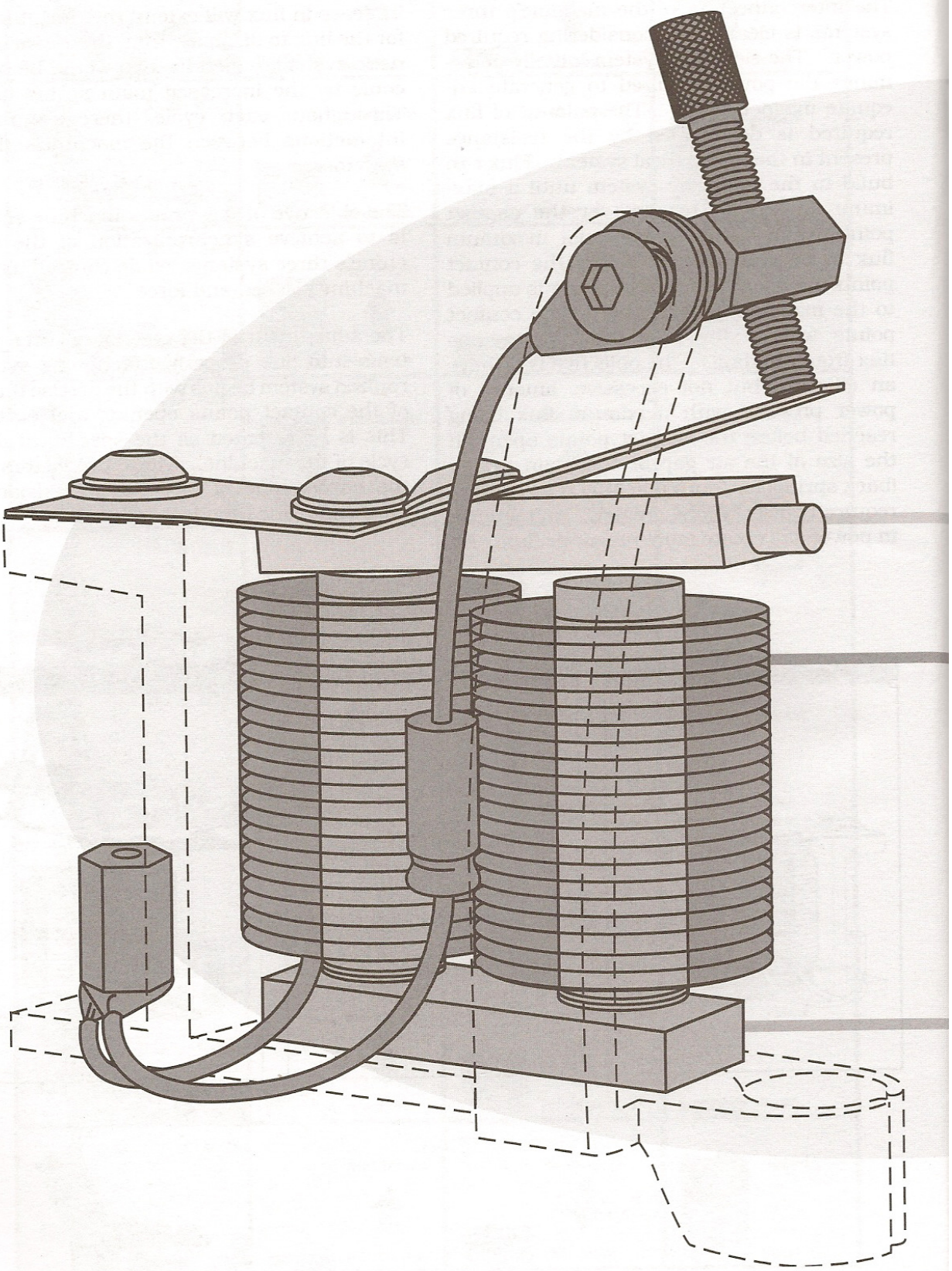
The adjustment of the machine's three systems into one properly functioning synchronized system begins with the precise timing of the contact points opening and closing. This is represented as the speed and duty cycle of the machine. These two factors are the cornerstone of any comprehension of tattoo machine function. **MGM**





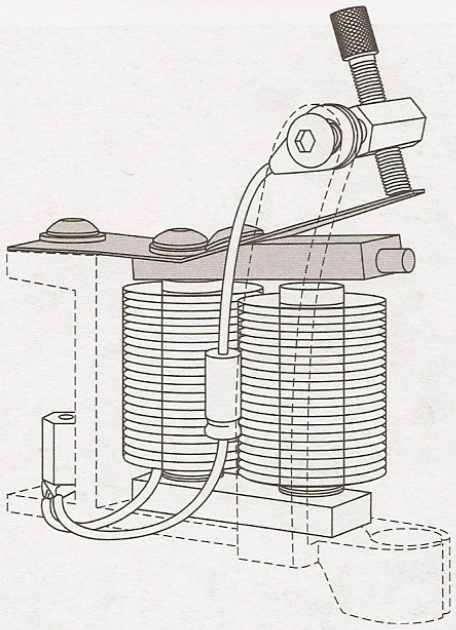


TATTOO MACHINE



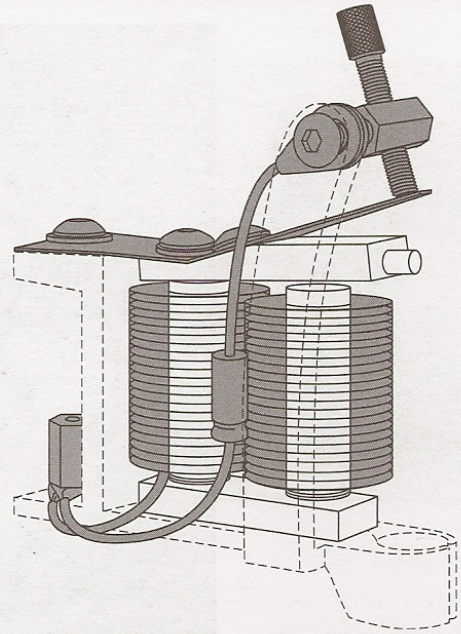
SYSTEMS

MECHANICAL SYSTEM



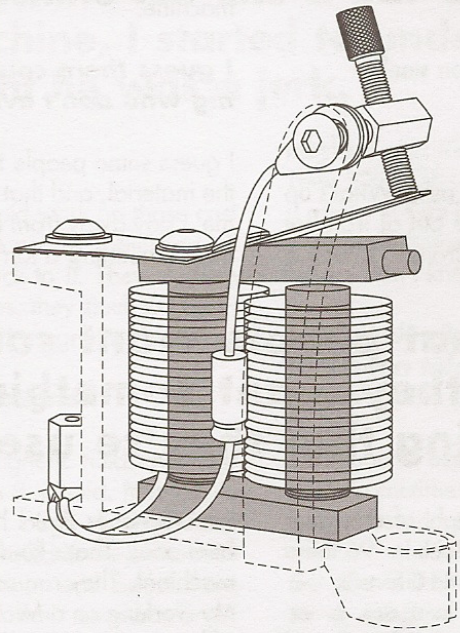
• SPRINGS • ARMATURE BAR •
• FRAME •

ELECTRICAL SYSTEM



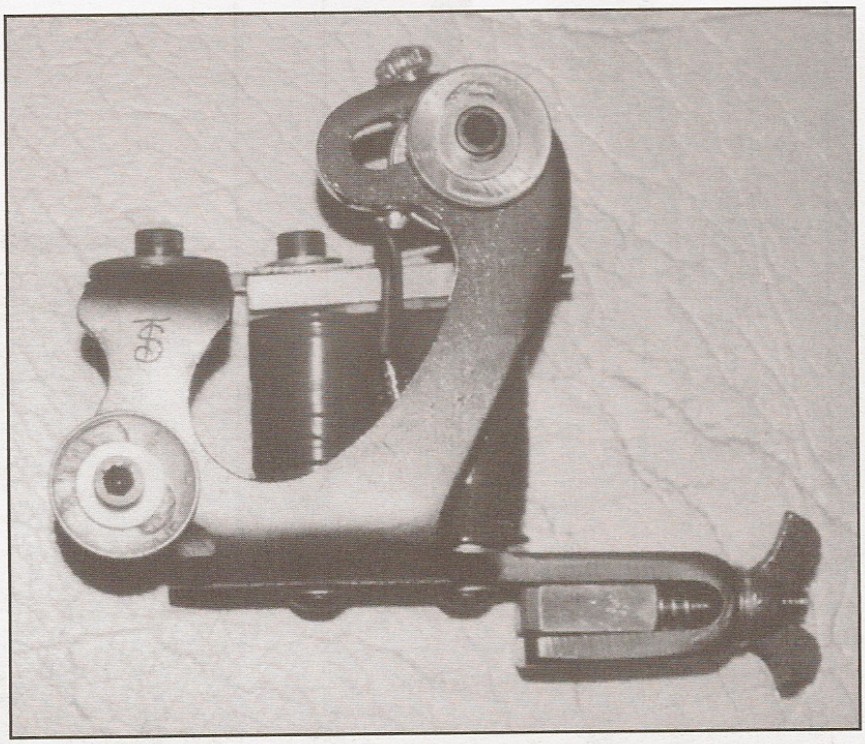
• BINDING POSTS • SPRINGS •
• CONTACT POINT SCREW •
• CAPACITOR • COIL WINDINGS •

MAGNETIC SYSTEM



• COIL CORES • ARMATURE BAR •
• YOKE / FRAME BASE • SHIMS •

Tommy Stegall



Bill Baker: Most guys building machines sell an iron frame and a brass or bronze one; what are you building with?

Tommy Stegall: I use 1010 low carbon steel.

It's not really iron?

No. It's not iron... and people always ask, "What's up with that? You don't make a machine out of iron but your company name is Old School Irons?" It was a cool name in '96, and I've even thought of changing it, but so many people know it now. Back in '96 there weren't so many people using the name "irons".

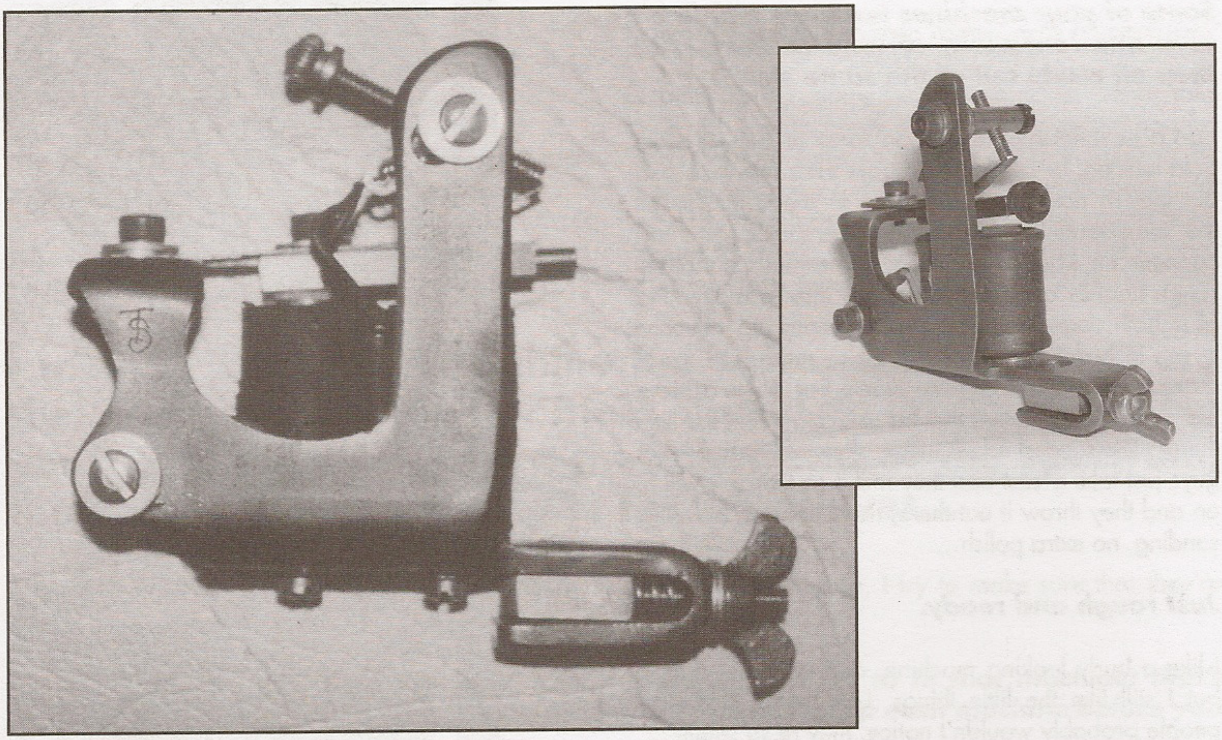
The name "irons" refers to the machine, not what material it's made out of.

Even if it's made out of brass or whatever, it could be called an iron. It's just a slang term for a tattoo machine.

I guess there could be young guys tattooing who don't even know that.

I guess some people think that the name comes from the material, and that iron is the best material; but for me, I stay away from iron. The way I learned that was from rebuilding a ton of Micky Sharpz machines... a ton. The ones that I had the best luck with were his bent ones. That's kind of where I got the idea for my machines. They ran so much better than his cast stuff. My working on a Micky Sharpz cast machine consists of banging it with a piece of steel. That's what I do to them, I bang 'em and I send 'em back.

I don't believe that people want something that's really different; they want something that's comfortable, something that they're used to.



Later, when he explained that what he was trying to say was that the machine felt like a bar of soap in his hand, not a tattoo machine, I started to understand... but at the time I just thought he was a jerk.

Will that improve them?

Well, to me it does. When I would work on those cast Micky Sharpz, I would lay one on my table and all kinds of metal pieces would stick to it. They stuck to the frame, they stuck to the cores, they stuck to everything. The whole machine would magnetize itself.

It became a permanent magnet.

Exactly. That messes up the magnetic field and your machine doesn't run as well as it should. It seems to vary when it's running, and it bogs down without even being in the skin. People would come to me with these Micky Sharpz cast machines and ask if there was something I could do with their machine and I finally started showing guys that if you bang on it with a piece of steel it takes the magnetic charge out of the machine and it'll run great for about a month or two. Then it'll build up magnetic charge and you bang on it again. If I do it I charge fifty dollars, but you can do it yourself. Some people just say I'm crazy and maybe I am, I don't know.

Well, I don't know a lot about metallurgy. I've been told that certain types of steel are really quite close to iron.

I just kind of use common sense with things. What we use is sometimes referred to as electrical iron. It has a low carbon content and it doesn't hold magnetism.

So the 1010 low carbon will be attracted to a magnet or will make a good electromagnet, but it doesn't become a permanent magnet?

Right, it won't do that. When you cut off the power to it, *it's off*, the magnet is off. That's why now pretty much everything I put on the machine, the coils, the armature bar, everything is either 1018 or 1010 or lower. With a heat treating process, you make it a lower carbon steel. You hear a lot of people talk about pure iron. What they're talking about is a low carbon steel that's been heat treated to have less carbon in it.

Some of your machines have got a little bit of a different color, or tone to them. Are they all made out of the same steel?

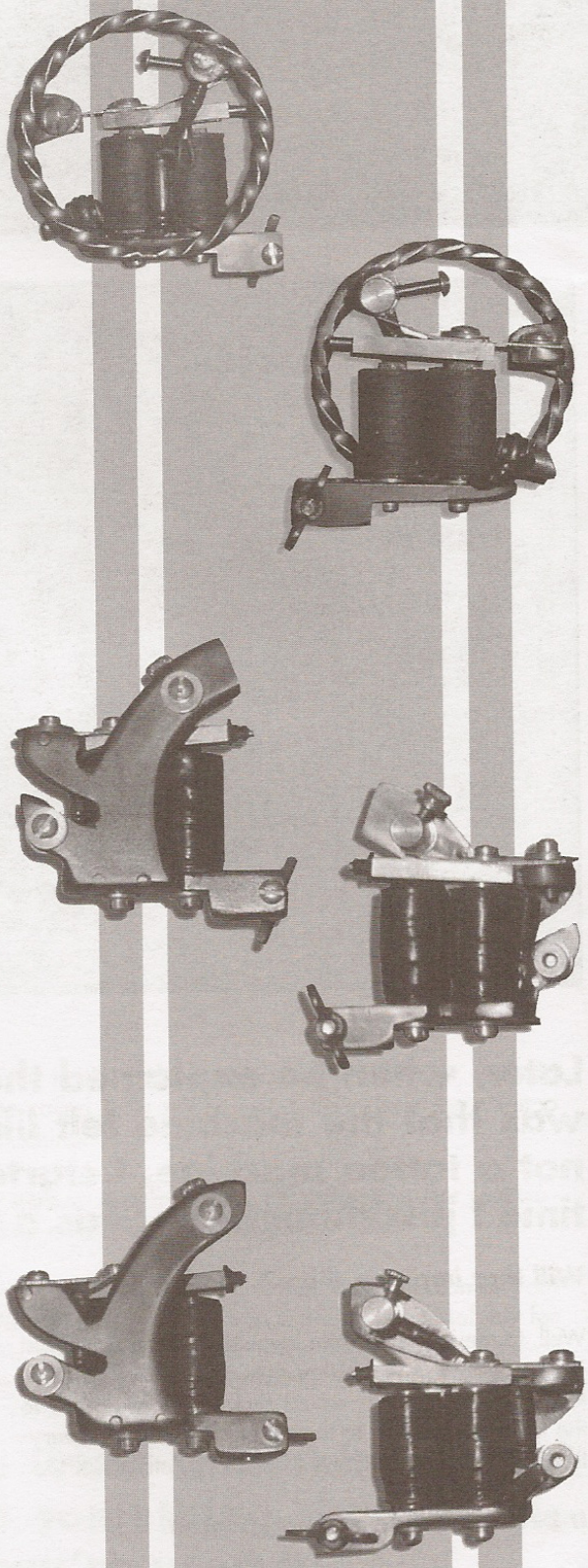
I do a heat finish on them and some of them are like gold looking, or brass. Some guys think they're brass, but they're not. There's no yoke in them, they're all the same material, just a little different finish. It just depends on what I'm thinking. Sometimes I put really rough finishes on them, sometimes they're really kind of smooth. Juan Puente has been a really big influence to me in building machines. Not so much as I try to make machines that look like Juan's, but I try to achieve the same level of detail that he puts into them, the little things. The sanded edges mean a lot, whereas a lot of guys just take a cast and they mill it so the coils will fit on and they throw it out there, no extra love, no extra sanding, no extra polish...

Just rough and ready.

I like a burly looking machine, don't get me wrong, but I still like the little things. Like things that most people probably wouldn't notice, they're so subtle.

When you hold a machine in your hand you can feel how it's finished.

I laughed at Lyle Tuttle about six or seven years ago when I first started making machines. I took him some crap that I had hand made in my basement, with really no knowledge of anything. I just thought they were the coolest things, you know, but when I took them to him, he just held them and didn't even look at them. He rolled them in his hand and he handed them back to me, and he goes, "Yeah... I don't really know about those. I can tell a good machine without even looking at it, just by the way it feels in my hand." And I thought he was the biggest jack-ass for that. I just thought, how can this guy think he's that good? Later, when he explained that what he was trying to say was that the machine felt like a bar of soap in his hand, not a tattoo machine, I started to understand; but at the time I just thought he was a jerk. Now, when I pick up somebody's machine or they hand it to me, if it's gouging me, I kind of don't like it already - even if it's the coolest running machine I've ever seen. If they haven't done any sanding or anything, if it's got rough edges or little pieces of rough cast sticking off of it that could tear a glove... I just tend to like them a little more smooth.



One-off custom machines by Tommy Stegall

Which one of your machines is the original or the first frame that you started with?

The first one was the one that kind of curves backwards.

The one with the really adjustable top binding post?

Yeah, that was the first frame I made to kind of do whatever I wanted with.

Have you got names for the different machines, or how do you reference them?

No, I don't. It's just my first machine, the more rounded one.

Pretty much. I do vary sometimes, but the .018" works well for me. I like the blue stuff a little better too.

You run that same thickness generally front and back?

Generally I do.

Do you make people extra sets of springs?

Usually I cut a couple for each machine. I really take a lot of time to hand sand the rear spring saddle, the back of the armature bar. I punch the hole in the spring with the proper sized die. I go through a lot of different things to make sure that the spring is not going to break. It seems like the more the springs run over the years, the better they work; so when I put the springs on, I try to make sure that they're going to last.

I mainly talk to the machine builders... a lot of them are the nicest guys you'll ever meet, they'll do anything to help you. But then you've got the other end of the spectrum, the people who are only out for themselves...

What about the other one?

We call it a Butter Knife because it kind of has a curve on the upright like a butter knife.

Then the other one is just the first one.

The other one was the first liner I got started with.

You always build that one as a liner?

Now I do, I pretty much always build it as a liner. The spring shelf is really far forward on it; it has a very small gap on it. I have another armature bar that goes back a little further that I like to use for really fast liners. I like the liners to have a really short throw on the back spring; it always seems to work better for me that way. I've looked at a lot of different people's machines, and they don't really use that. It's like a normal-sized throw, like a shader but with a cut-back and everything.

I think you're on the right track there, it's going to make that back spring act harder.

It acts harder, and the machine runs faster. You can always mill a little off with the belt sander, just take a little off of it.

That will give a little more spring length. Do you always use the same spring thickness?

And they're cut to fit that machine; that's part of setting up each machine before you send it out.

Exactly – the springs and the geometry are the most important part of the whole thing. When people call and want a machine I ask them what they want it for and what they want to achieve with it. Will they be packing color solid with it or blending color, or will you be doing black and grey shading? It depends on what they want as to how I'll set up the machine for them.

I think that black and grey shading is really dependant on the machine running right. A lot of it is technique, but I believe that style of tattooing really requires that the machine is working right.

I think it does depend on the machine, more so than if you're packing color; when you're coloring, you can thin your pigment a little or slow your hand down or speed your hand up. With the black and grey, once you start it you've got to keep it going. You have to get that consistent shading. I'm not an expert at black and grey by any means, but I've watched a lot of people who are really good at it and have taken in the technical aspects of it - what they're doing with their hand and how the machine

is reacting to it - and making a machine that works a little better for that style of tattooing.

What's the biggest consideration if you are setting up a machine for black and grey as opposed to setting one up for color?

The way I set up a machine for black and grey, I call a cut-back shader. I have a really long back spring, but then I have a really cut-back front spring. One of the reasons I made that Butter Knife frame was for black and grey machines. It'll work good for color or whatever, but it works best for black and grey. The spring length is not quite as long as a shader, but more than a liner; then the front contact screw is moved back to make it run like a liner but hit like a shader. So it's not hitting really solid or hard, but it's keeping up with the pigment that you're watering down as it's running through the tube. It just seems to make the shading go a lot further.

And it's got a little bit of a longer stroke than a liner?

I can't stand the guy who will tell you one thing on the computer and then when he sees you, he kisses ass and tries to make things all better.

I like a really a long stroke on a black and grey shader. Then you get that gradation with a flick of the wrist. If you watch a lot of the black and grey guys, they kind of come down like they are landing a plane or something; they come down fast, hit the skin, go in a round-about motion for a quick second and then flick it outwards. It's so fast that a lot of people can't get it down; it took me a long time of sitting and watching to figure out what they were actually making that machine do. You can actually hear it; when it hits the skin it's like a weird sound, as opposed to somebody who's packing color.

The original three frame styles you started out with were all of bent metal type construction. Do you feel that type of construction has some advantages over other ways of making frames?

No, no – I like it because it's all one piece. I'm getting ready to do some handmade stuff, by welding a prefab style. I agree with all styles of machine building, it's just that to me it's all got to be done with certain material or parts of a certain material. You can make a brass frame and that's fine, you could make it out of bronze, you could make it out of anything you want – but the essential parts in there have to be made of 1018 or lower. Something that's used as a yoke, it's gotta be a good one.

The entire magnetic system, the armature bar, the coils, the yoke, or if there's no yoke, the frame base.

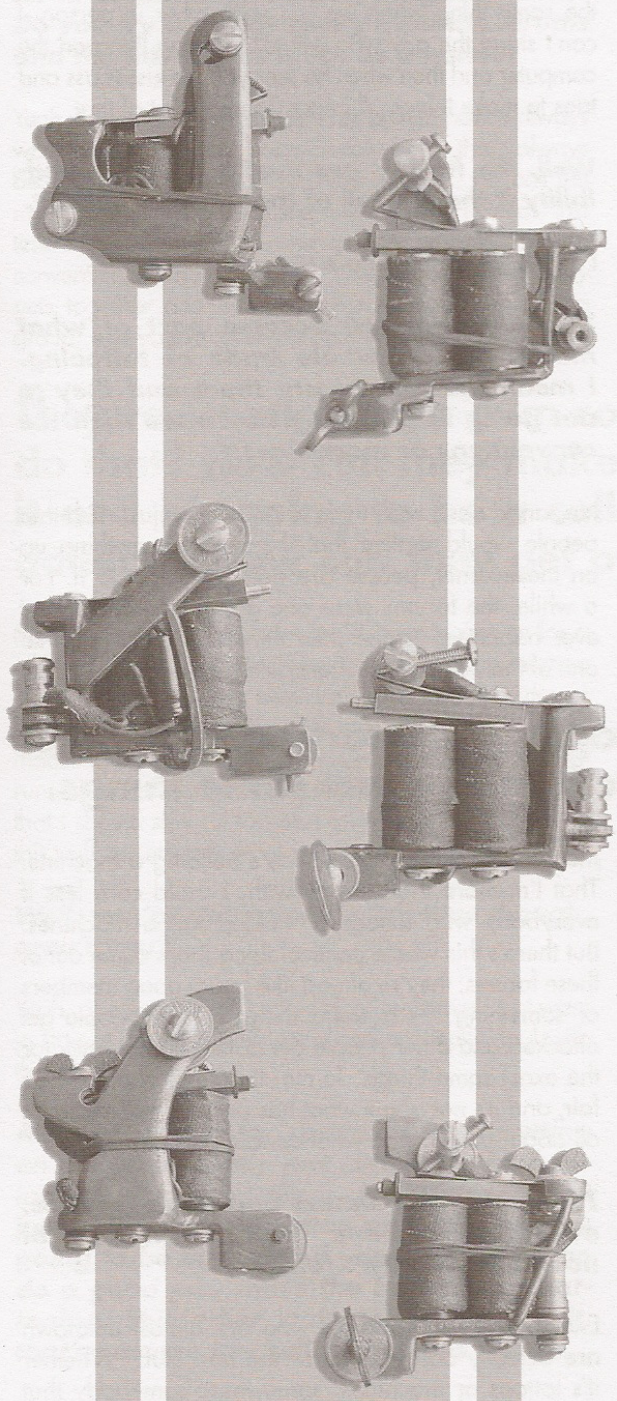
Armature bars seem to run about the same to me. They sound a bit different from different people. I do like the low carbon steel. That's what has kept me from casting a frame; I don't want cast iron, I want low carbon steel.

I imagine with the bent metal construction, when it is cut out and flat, before it's all bent, it must be sort of like a puzzle piece.

It's definitely different. When you get the pieces back from the water jet guy or the laser guy, you look at them and wonder how am I going to... because the chucks are completely straight, the whole thing is straight. It took years of trying to get jigs made and altered to work exactly how I wanted them. We pretty much got the bending thing down, it's just the chucks are a little longer than I'd like them, just to be able to get a nice thread on the guillotine piece. A lot of people do them shorter, but then you have to get into putting a small thread in there - and then those threads pull out, even if you make the part out of stainless. If there's not a good thread in there, you get people tightening that chuck down super tight - for what reason I don't know, but they do - and they'll end up stripping out that part. So I ended up making a bigger piece for that which made the chuck a little longer, but it did end up making a nice balance to the front end. It kind of put it out there a little further on the front. I don't know if it exactly took away all of the heavy stuff on the back, but it did seem to balance it out a little better.

With the bent metal frame construction, that guillotine tube vise is really the only tube vise that's possible.

It's the only one you can do. Like I said, it works great; it's just that there are a lot of parts in making it. It was a way for me to get started without having five grand to go get some stuff cast. Really my first two machines have been something to get started with, and people just kind of like them, I guess. I wanted to do different



One-off custom machines by Tommy Stegall

tests; there were things that I had in my brain that I wanted to try out. Now I've pretty much got it down to where I'm really liking what I'm building, and we're going to go from there and make them even better.

Does that mean that you've pretty well got the geometry and the components where you want, you know what you're going to put in place, and now you're working on stylistic stuff? Or is it a little of both?

More stylistic. It's hard with tattoo machines to really push it because you have the geometry, so you can't do something crazy that no one's ever seen before; but you've also got to worry about anyone who might be making something similar, and not stepping on their toes. I was making people machines using a Supreme frame up until just a little while ago. I was doing a Mad Bee style, chopping the fronts off of them. Spaulding was getting me the ones that weren't plated, and they had the old chucks. Now they're completely out of them, they say they're not going to re-do them. I'd get ten, maybe fifteen frames at a time from them, and as soon as I would get them built, they'd be gone. I spent so much time trying to come up with something different; but when I went with some old standard and did it my way, it would sell ten times as fast. It kind of altered the way I think about frame styles now, as opposed to when I did those first frames on my own. I thought that something completely different from everyone else would really push me out there; I thought that was what people wanted. Now I don't believe people want anything that's really different; they want something that's kind of comfortable, something that they're used to.

The Supreme is really kind of a classic tattoo machine frame style. There's really nothing extra or unnecessary there; it's got some style to it, but everything on that frame is the way it is for a reason.

That's what I've been telling people for a long time. If you're looking for a frame to build up into a machine, the Supreme is the only one you need. Well, with the exception of the chuck now - I don't understand why they changed the chuck, but that was really the only frame you needed. You could build it as a shader or a coloring machine. You could do whatever with that frame. You still can - it's just that it has that crappy chuck.

I think there will always be somebody building a machine that looks like the Supreme or that's based on the Supreme.

Exactly. I've tried my best to stay away from that style, but I think I'd like to do one that's close.

I don't think there's anything wrong with that. I can think of at least four well known machines that are almost exactly like the Supreme. Maybe some are a bit heavier, but they're basically the same. Are you going to discontinue your early frame styles? Or will you keep making them for a while?

I re-did those machines maybe two or three years ago and I've kind of regretted it ever since. I should have, at that point, done something completely different. I did make a lot of changes, if you look at the first versions next to the second; they're not the same machines by any means, but they're basically the same shape. In the future I'd like to make a lot more one-of-a-kind machines. I really think that's where I want to focus my efforts.

Are you considering making a cast frame?

Yeah, I would like to get a cast frame that I could do anything with. If somebody needed something, I could get it done; I could make them a shader, a liner, whatever. A lot of people do want a cast frame; they think that's got something to do with quality. Years ago somebody actually posted on a forum that the machines I built were bent like that because it's easy to do, and cheap… you know, they don't even know how hard these things are to bend. At that time we were doing a lot of them with torches and a vise. I had made a mistake on my first run of putting the tube holes in and we had to line those up…

It's a weird thing, certain people get attacked and other people get patted on the back for the exact same things.

It would be almost impossible.

When we made that bend, we had to line them up and have that extra guillotine piece fit perfectly. We made a bunch of them that way and it was one of the toughest things I ever did. If I had the money, casting would have been much easier. It was hard to listen to someone on a forum say that it was just a cheap and easy way to do it, when for me it was the *only* way to do it. It was the only way I could make a machine.

That's something about the Internet and the forums that is both good and bad. There's a lot of feedback, but a lot of it is really ignorant, and I don't mean that in any sort of confrontational way - they just don't know, so they just say whatever pops into their heads.

I'm all for people saying what they want to say. Sometimes I say things that come off as me being an asshole, but I will say those things to you. I'll tell you the same thing when we see each other in person. I can't stand the guy who will tell you one thing on the computer and then when he sees you, he kisses ass and tries to make things all better. There's a lot of that.

Well, the forums eventually will lose credibility if they're full of that kind of bullshit.

I think most of them have already.

They'll finally just become part of what makes up the whole trade of tattooing. I mean the forums are there and they're not going to go away any more than the conventions or magazines.

No, and I don't wish them to go away. I just wish that people would realize that if you put something up on the Internet, people are going to react to it. For a while, the forums were one of the best things that ever happened – and then they kind of turned into one of the worst things that could ever happen. Not so much because now everybody's building a machine. That I'm more than happy with. I could care less if everybody who tattoos is making tattoo machines. But there's this whole political thing that's come out of these forums; they're almost like forum gang members or something. It's a weird thing, certain people get attacked and other people get patted on the back for the exact same things. To me, that's not about what's fair, and it's not about what has actually got merit; it's all about politics and what *certain* people think.

The same rules should apply to everyone, even for someone from the middle of nowhere who isn't famous.

Exactly. A lot of people who are almost unknown are actually doing some of the best stuff. Whether it's tattoos or machines, somewhere somebody that you've never heard of is doing way better than what you think you're doing. It's a lot bigger for me than just tattoo machines; it's tattooing in general, and I think a lot of these guys have lost sight that they started somewhere…

Almost everyone, when they first start in this, realizes how amazing tattooing is, and what a great thing it is, but some lose that

really fast and all of a sudden it's all about them. They start to think that they're better than tattooing. So do you ignore them? Do you try and stay away from the forums and the Internet as much as possible?

Yeah, I have been off of them for awhile now. I always went to Todd's forum; Texas Custom Irons, that's always been a good forum for machine builders. He has the machine builders get-together every year in Dallas; last time sixty-five people showed up from all over. It's not a convention; it's in his shop and in his garage. Everybody gets together and builds one or two machines as a group; everybody makes a part for the machine and then they put them up for sale. It's been going on for a couple of years now. Next year he's going to invite even more people. His web sites are: Texas Custom Irons or Fineline Tattoos. Todd's been a big help to me as far as machines and making stuff happen. I am really bad for running out of parts and not staying on top of the things that I should stay on top of. I guess I just don't take all this stuff as seriously as some other people do.

Well, you're still tattooing full-time though, aren't you?

Yeah, of course I'm still tattooing. Sometimes I just want to stay at the shop and tattoo and not really deal with the forums.

A lot of it is so far removed from putting on a tattoo. Really just sitting down, having the stencil on there clean, and you're just going to do a tattoo and the person's going to be happy and you know you can do a good job. That's the best part of tattooing. This other stuff, the politics of it, that's become the hell that comes with it.

I agree totally on that, but I've met a lot of really good machine builders and tattoo artists. I mainly talk to the machine builders, I guess because we have more in common than just tattooing. A lot of them are the nicest guys you'll ever meet; they'll do anything to help you. But then you've got the other end of the spectrum, the people who are *only* out for themselves and *only* want to be the *only* guy doing this thing.

You see that in the tattooing side of this too. I've seen guys who treat their customers so bad, that even if that tattoo looks perfect, I can't consider it a good tattoo.

I've always said that I'd rather get a standard tattoo from a nice guy than a mind-blowing, ground breaking tattoo from some dick.

I'd say the same with machines. I'd rather have a machine that some guy put some of his own effort and sweat into and really built it with some consideration, than some superstar machine.

They're creating their own collector's items. How can they do that? How can they make something and say, "I made it and it's going to be a collector's item - it's a thousand dollars." How can they get away with that?

From some super rock star guy that's got somebody building them for him.

And you couldn't even use it in case it devalued it as an investment or something.

That's another thing that I think is really funny about tattooing today. These guys that are selling machines are doing the same thing that the comic book companies did in the late eighties and early nineties. They're creating their own collector's items. How can they do that? How can they make something and say, "I made it and it's going to be a collector's item - it's a thousand dollars." How can they get away with that? Who's buying it? How hard is this? How crazy? When you leave your shop, no one knows who you are...

It's just tattooing. It doesn't mean anything to a normal person.

I tell guys, get off the attitude. I don't think there really are any secrets to this, and anybody who thinks there are, they are just full of themselves. There's no secrets to any of this. There are people who understand and there are people who don't really understand yet, and then there's people who will never understand.

MGM

Michael Oldham

Bill Baker: One of the things that I like about being able to interview you is that you've been doing this a long time. When did you start tattooing?

Michael Oldham: I have been tattooing for 24 years. I started my apprenticeship in 1979 in San Antonio, Texas. I apprenticed with Don and Marge Verlander.

When did you start building machines?

Well, I guess the first machine that I built from scratch was about a couple of years after I started tattooing, so that would have been in the early eighties. That's when I really started building.

The trade in general was a lot different in the early eighties.

A tremendous difference.

I know Paul Rogers was still building at that time. Did you have any interaction with him or see any of his machines?

I corresponded with him for a period of time through the mail. I got to meet him once in Philadelphia at a convention. I had a machine that I had built and showed it to him, and he was helpful in giving me a direction. He thought that it was important that if I was going to build machines, that I stay with it whole-heartedly, and try to learn everything that I could about it - not only about the machine itself, but the materials used and things of that nature. He wrote me several letters. I asked him a couple of questions and he was real helpful in answering them.

When was that?

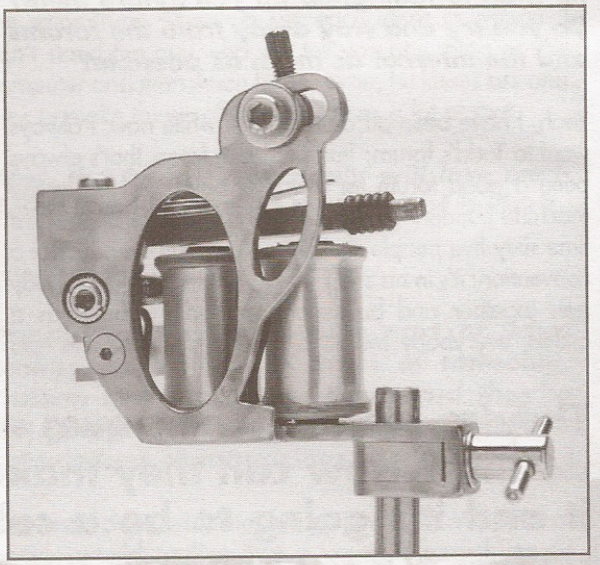
Probably in '81.

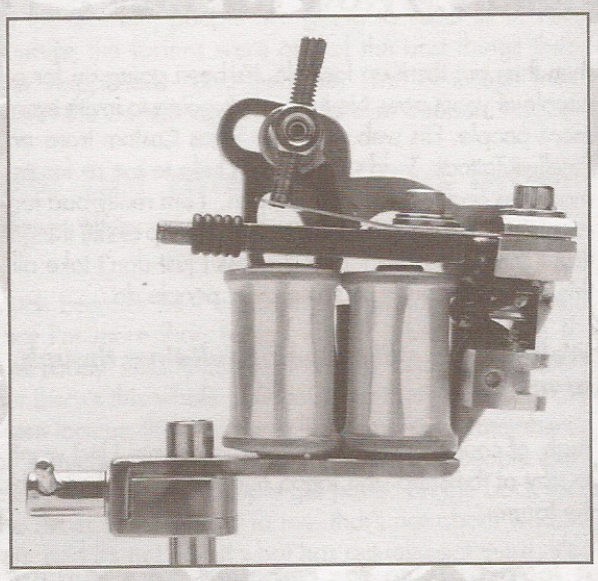
I don't know what kind of an influence that would have had on you. I mean, I never met Paul Rogers, but everyone who I've ever spoken to who knew him said that he was a real inspiration to them.

He was different from a lot of other people I met at that time. There was much more secrecy in those days, so getting someone to open up, especially someone who had some impact like he did... getting someone like that to speak to you was unusual. So I was really inspired by him, not only because of his knowledge, but as a person. He was a really great guy.

I think it must have been nice to see someone his age still involved in tattooing when you were just starting out. If there weren't older guys around, I think I would've tended to wonder if I could do this for my whole life. It doesn't seem like there are as many older guys around now. I don't know why that is...

I don't know if they just don't seek the limelight the way younger people do...





That's possible.

There is a different, a completely different flavor to the industry now, compared to those days. There was no Internet, there weren't tattoo magazines and, of course, the conventions had just started out then.

Did you go to the early conventions? I think Houston was '76, Reno was '77.

The first one I went to wasn't until '84, I guess. There was another small convention in Houston that I went to. I met guys like Jack Rudy and Lyle Tuttle. I met Greg Irons; he was another real friendly, outgoing guy. I also got to meet Doc Webb. There was this huge difference in the span of people that were there; it was really nice. I haven't done a lot of the convention stuff, but the early conventions were much more influential to me.

So you don't really go to the conventions now?

No, not unless they're close to where I'm at.

How many machines did you own when you first started tattooing?

I started with two machines. I bought a third machine some time later, another used Supreme. This would become the machine I used to try things out on, leaving my two work machines alone.

How many machines do you keep on hand to work with now?

Now I keep six machines on hand. I usually work with four: two dedicated liners, a shader/coloring machine, and a grey wash machine. I don't specialize in one type of tattooing. I try to give the customer whatever style they're looking for. Some people want real heavy line-weighted stuff and some want single needle stuff.

The machine I use for shading runs faster than the machine I use for coloring. Is that the same for you?

thickness, did you try any radical or different shapes or spring designs?

I never did get too crazy with them. I did try different shapes of front springs, from really thin tapers to having them pretty broad at the contact point. A lot of this was before I had a meter, so I kept written records of what they did or how I felt they affected the machine. You could tell that they had some impact on the tune up, but the degree of that impact was difficult to gauge. I never did approach the building of machines by trying to make leaps of change, they were all subtle.

That's one of the things I really admire about your machine building. You weren't trying to build the ultimate machine on day one, you've been taking it one step at a time with small changes to the frame and it's progressing over your entire career. A lot of young guys just want to be famous in the magazines right away. They want some elaborate cast machine that's got their signature on it right away, and I just don't see a whole lifetime of tattooing in that. I see something like a ten year focused effort and then I imagine they'll be left wondering what to do.

There is a different, a completely different flavor to the industry now, compared to those days. There was no Internet, there weren't tattoo magazines and, of course, the conventions had just started out then.

My color machine will probably run at 80 to 90 Hz and a grey wash machine... I would think that mine is probably around 115 Hz.

That's almost exactly where mine is too. I run my coloring machine a little faster than yours, but the shading machine is the same.

I have a different gauge of spring on my grey wash machine as well. Being able to get spring stock graduated to one thousandth of an inch.was a big help for me.

That was really the beginning of a whole new chapter in machine building. That's when we really began to understand how the machine worked.

Prior to that, 0.018" was what I always used. There was a great deal more tweaking with the spring length, and then also the tension. It has been much easier for me to get a machine to run the way that I want since I have been able to change those springs by just one thousandth of an inch.

Absolutely, because then the geometry of the frame isn't such a big deal and you can make any machine do what you want it to by changing the spring thickness. Aside from changing the

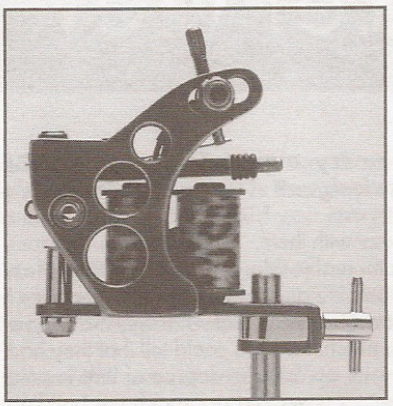
For me it's kind of different... I was never cut out to be any sort of famous designer or machine builder. I've just always been interested in the machines; they fascinate me. I do not have plans of becoming a big time machine builder; tattooing is still my passion.

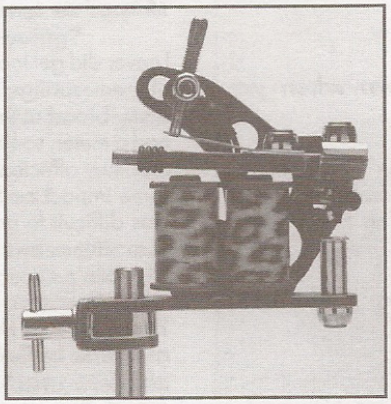
What percentage of time do you spend on the machines as opposed to tattooing?

Well, I guess nowadays I probably spend about forty percent of my time working on tattoo machines. A tattoo customer and a machine customer, they're two different types of people that you have to please. In tattooing, of course, your work is immediate and it's not reversible, so your approach to that is different than with tattoo machines. I'll go through phases where I really get enthusiastic about a new idea, and I'll devote more time to the tattoo machines. Then there are times when I get involved in tattoo projects that are really important and fun, so having the diversity in my work is good.

You're lucky in that, you're doing what you feel like doing.

In general it's pretty much like that. Tattooing has afforded me those possibilities; it's really a great business. I really haven't done any advertising to build tattoo





machines, so there are periods of time where I don't make many.

Have you always built machines in a pre-fab style, where you're making your side plates and your bases and things, and then they're welded or brazed together?

I built some bolted together frames early on. I built some hybrids too, where the coil shelf would be a low carbon steel and then I'd use brass or even aluminum for the side. Now I've gone to jig welding the frame.

That's a logical step, to start with the frames assembled with screws, like Paul Rogers did. Once you can set up some jigs and weld them, you can make a lighter frame because the base plate doesn't need to be thick enough to thread into. It's also probably less time consuming to weld than to drill, tap, and assemble with set screws.

All those things are true. Really it just evolved from wanting to build a better and more precision type of frame, being consistent. My set-up isn't too much different from the way Paul Rogers worked, it's basically hand tools. I don't have any sort of computer for designing or any sort of CNC stuff or anything like that, it's just all built with hand tools.

When you're building machines, do you cut out a number of side plates and keep them in reserve, and then build a bunch of machines at some other time, or do you do one machine from start to finish?

I'll build a series of frames and I'll build all of those at once.

How many frames would be in a series?

Oh, probably six to eight at a time.

Okay, so you'll cut all the side plates and base plates for them, and then you start assembling. Do you wind the coils for those machines at that time or do you make those in advance and keep an inventory of coils?

A tattoo customer and a machine customer, they're two different types of people that you have to please.

No, as the frame is completed, I'll move on to the next step which would be fabricating the coils, armature bar and binding posts.

Really... so every part of the machine is built at that time?

Yes, because if I decide to make subtle changes to the frame, then it's really easy to do. If you have your frames cast, then you're kind of stuck there with whatever it is that cast will produce. I have some adjustability built into my jig for the spring saddle. I can adjust that to whatever angle I like.

So once you do the welding, then do you kind of fine-tune the frame with a little more machining, or do you work with the file and stuff, or is it pretty precise because of the jig?

I've gone through an evolution of jigs over the years. I've just finished a new one which is really working out well. They're all TIG welded, so the heat is just really localized to a small area and there's very little distortion. I have another fixture that I bolt the frame into and I check to make sure the spring saddle and the coil shelf are absolutely square to each other. I can tweak that just a little bit, but most of the time it's not necessary. The frames really come out very consistent.

When you do a run of frames will you make them all the same, with the exact same cut-out elements?

For instance, a customer may see one of my machines and they'll want one similar to it. I'll have to ask them to describe it to me because I really don't have a set pattern on that. I have locations that I want the components to hang off of and those are basically the points that I start out with. The aesthetic of it will change though.

Will it be really similar for an entire run or would each side plate be a little different even within that run?

The stainless ones will usually be very similar, the material is so hard to cut and work with that once I get the tooling set up to do one, I'll do those all fairly similar. The iron and brass are much easier to work with.

So there will be more variation with them but the geometry is virtually the same, like the placement of the back spring mount and the top binding post.

I usually stay pretty consistent as far as the geometry goes. I don't alter that too much.

Are the coils always the same number of wraps and the same core size?

Yes, I used to experiment a lot with the coils, but I've kind of settled on a 5/16" diameter core. Eight layer coils are what I like to use. I will build a ten wrap coil for a customer if that's what they insist that they want, but everything changes then. To get that machine to run is different than with an eight wrap coil. I try to stay with a 5/16" core and an eight wrap coil regardless of whether it's a shader or a liner.

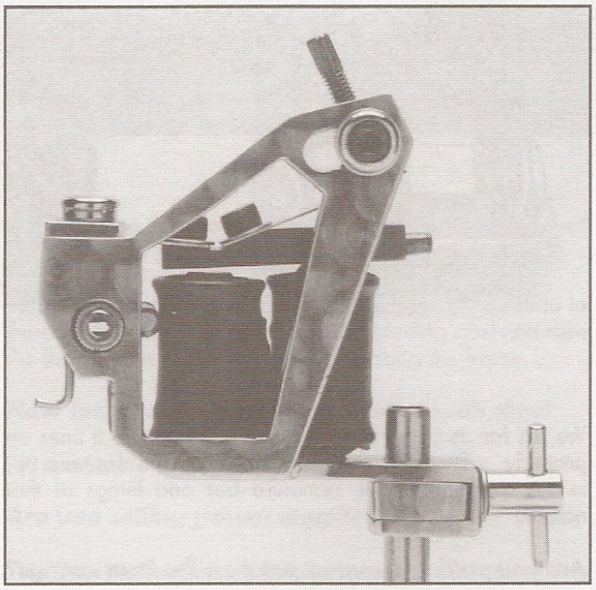
I'm sure that does make your life easier because the set-up is very consistent. Do you use the same height of coils in all of your machines?

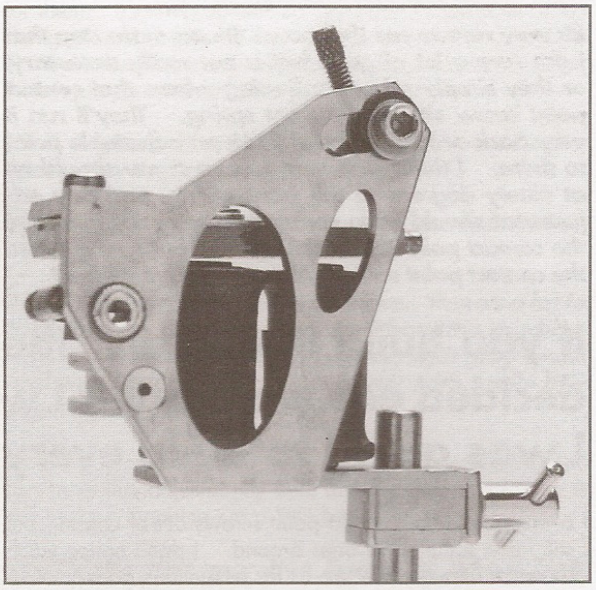
I use the same 1 1/4" tall coils in all of my machines and I use a quarter inch yoke. If you look at the length of needle bars, there's a 1/4" difference between them.

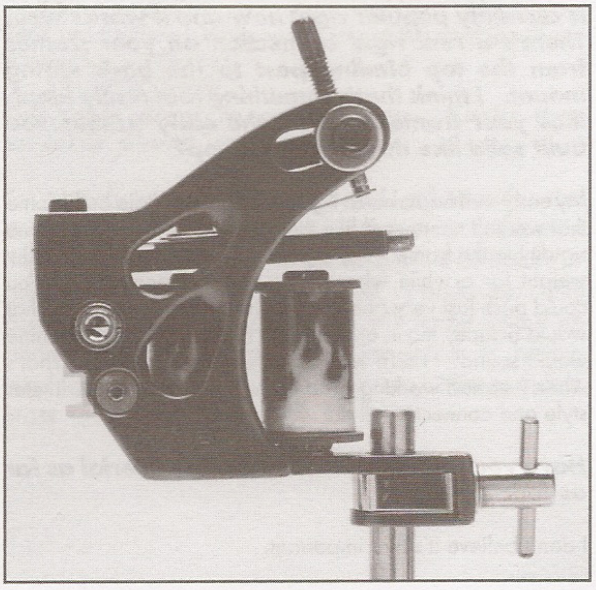
So, you're using 1 1/4" tall coils always and then a 1/4" yoke on the brass frames. The stainless and iron frames are a little bit shorter than the brass frames.

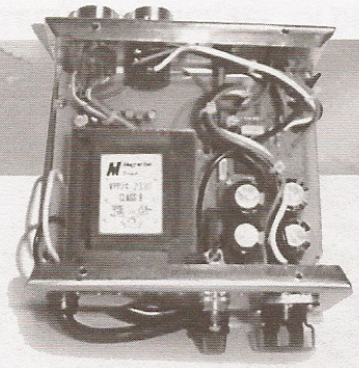
Yes, the frame is the difference on the brass. With anything with a yoke, the difference is going to be in the side plate.

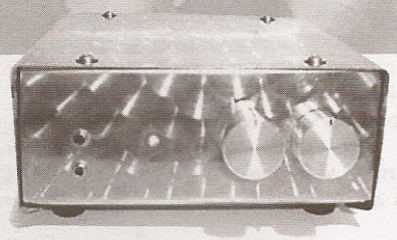
You've got an adjustable top binding post on your machines, so if somebody wanted to put on a shorter front spring, they could, but that's the only adjustable thing on your machines.











Left: Power supply designed and built by Michael Oldham

Yes, as far as being able to move that point so it lines up properly. The rest of it I believe you do in the tune up, in the springs and the armature bar and things of that nature.

Are you putting a contact point on the front springs?

Yes.

It's very rare to see that now. It's an extra step that I am sure a lot of guys feel is not really necessary, or they simply rely on adjusting where that contact point screw sits on the front spring. They'll run it way back or forward and that's an adjustable point to them. I think the contact point screw should be at ninety degrees to the front spring, and any adjustment should be in spring thickness, not in where the contact point screw sits on the front spring. Are the contact point screws you use always copper?

I always build the contact point screws out of copper, but I still have some silver ones around. I don't notice much difference between the two as far as function goes.

No, I wouldn't think so. Silver works great, copper is certainly popular right now and it works well. There's a real rigid connection on your frames from the top binding post to the back spring mount. I think that's something that really identifies your frames. Were the early frames you built solid like that across the top?

My early stuff had a much lighter upright and I did build some that weren't connected like that, but I feel that it adds some rigidity to the frame. For instance, I had a Spaulding Lightweight for a while when I first started tattooing and you could push just very gently up on that binding post and that would actually move and change the way that the machine would sound. There was actually movement in it. That's when I started working on a frame that was that perimeter style and connected all the way around.

Have you found any difference in material as far as function goes?

I don't believe it's that important.

I know you said you really like stainless steel and that it's a beautiful material, but hard to work with. Is it worth the extra effort that goes into using stainless?

Yes, the machines that I tattoo with daily are stainless. I do have two iron frame machines that I use a lot, but I really like the stainless, it's so durable and as far as the finish goes, it just lasts forever. I've dropped them too and they're kind of tough to hurt, whereas the brass frames - even though I do build brass frames - you have to be careful with them. If you drop it and it hits just so, it could be over for that frame.

Do you make your own armature bars?

Yes, I build everything except for the screws and the washers. In one of the conversations I had with Paul Rogers, he said you have to take control over everything that's on the frame and the machine. If you build it yourself, then you have control over it. So I decided early on that if I was going to build a machine, I was going to build everything. I just feel it's the difference between someone who assembles machines and someone who builds machines.

If you build it yourself, then you have control over it. I decided early on that if I was going to build a machine, I was going to build everything.

There is a big distinction between the two.

I wanted to try and be involved with everything. I've been able to either make tools or find tools that I can adapt to build the components. Armature bars were one of the important ones. The machine is really simple and yet at the same time so complex in the ways that you can change it.

Most of the machines you make are set up to run with a small plug. Do you use a conventional clipcord?

I don't use a standard clipcord set-up anymore. All of my personal machines are with a 1/8" stereo jack.

Do you ever use an RCA connector cord and jack?

No.

What about coming out of your power supply, do you use a 1/4" there?

No, 1/8"...

Eighth inch on both ends? Quarter inch is a lot more common on the power supply. I know it's a big connector, but...

It is large, and probably a bit more durable than the 1/8". The 1/8" you have to be a little bit careful with cause the things are small, but it was really the only thing I could find where I could run three wires to the machine. I run two circuits to the machine from my power supply. I run a regular D.C. power with a three conductor cord, then I run a modifier circuit that I can tap into from the front of my power supply through a rotary switch. They just use a common ground, so I use three wires going to the machine. There are capacitors on the board that I can change right on the power supply.

Wow... before the clipcord even.

Right, it's a rotary switch that taps right from the circuit board that's in the power supply, and on the one I use there are seven positions, so there are seven capacitors that I can use. Capacitance in parallel adds, so I'll run a small capacitor on the machine and then I'll tap into any of those seven, and get those to add to the ones on the machine.

Okay, when you say small you mean like 22 uF or 15 uF, something like that?

On mine, I'll run a 10 uF on the machine and in the power supply I'll have everything from say like 3.3 uF up to maybe 50 uF, and they'll add to whatever's on the machine.

Yeah, well... now I'm baffled... so you must build these power supplies.

Well, that's been another point of interest. It's the combination of the two, the machine and the power supply. I started out with the black box from Spaulding and had constant trouble.

Yeah, that's a terrible power supply, one of the worst ever.

I went out and bought some books and started developing a power supply. Then I had the idea of trying to add these capacitors into it. Some of my early power supplies had these little plug-in sockets on the front that I could put different components into.

Sort of in-line with the clipcord; you'd plug the component into the supply, then plug the clipcord into the component?

Right, I kept trying different things and then I got the idea for this rotary switch, and it works.

So the machine has got some different wiring in it too, to that 1/8" plug... it's not just one lead goes to the insulated back binding post and one lead grounds out to the frame. There's another lead to the insulated top binding post. Is that how you've got it?

Yes, the machine has to be wired that way. One lead to the back binding post, one to the top binding post and then the jack itself is the ground and it contacts the frame.

How long have you been tinkering with that?

I've probably had that set-up for five years now.

Are you selling power supplies?

Well, I only make a few because they are so time consuming to build. If it's a customer who bought several machines from me and they get interested in this supply, then I'll build one for them. It's really something that I don't have a lot of fun doing. I've built some of these power supplies for guys who like the adjustability built right on the front panel, and then there's people who really haven't cared for it, so...

Well, I guess it would work best if you had a really tiny cap on your machine.

For grey wash though, you can run real low capacitance; it'll hit soft.

Yeah, I agree totally with you there. There's a lot to choosing the right capacitor and how the machine runs and how hard it hits. I agree, with grey wash and small liners you can get away with really low capacitance.

So if a guy only wants to have a couple of machines, you can have this adjustability built into the power supply. It will make a machine run a little bit different.

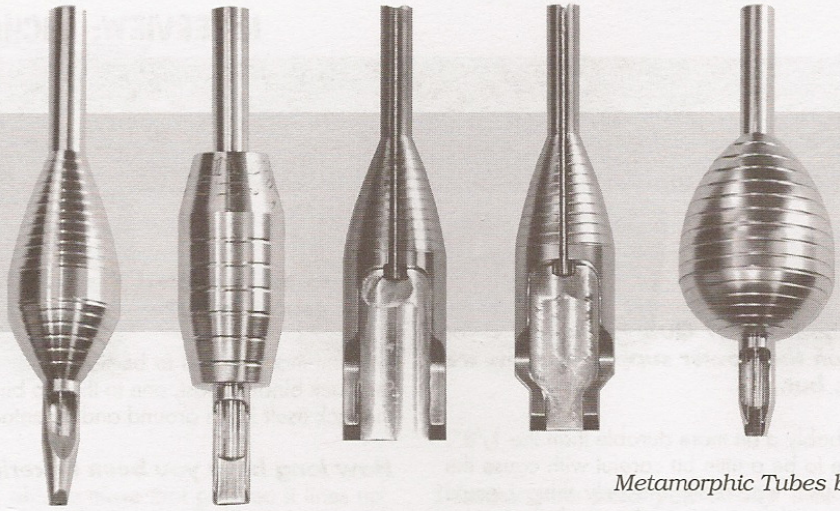
You're the first guy I've heard of who's built something like that.

Well, it's not anything secret or anything. We always have used different components to get the machine to run differently.

If people want to contact you, should they email or phone you?

I'm the only tattooer at the shop and I still have this real strong belief that the customer in the chair is the most important one at the time, so phone calls I'll do before or after work. I don't have a web site. I prefer the initial contact to be through email. I will make follow up phone calls to anyone who's interested in having machines built. My email address is: mo13@satx.rr.com.

MGM



Metamorphic Tubes by Andy Johnson.

Interview:

ANDY JOHNSON

Metamorphic Tattoo Studio

Bill Baker: I don't want to downplay your machine building, but I want to talk about tubes, and how you got started making them.

Andy Johnson: I saw an artist from the U.K. using this brass tube at the Tattoo Tour in San Francisco. The tip must have been 3/4" wide. I asked him, "Where did you get that tube?" and he said he made it. Shortly after that convention, I made my first set of one piece tubes, basically because I was having problems keeping five piece tubes clean. Trying to keep them clean was really a pain.

Were those original tubes different than the tubes you are making now?

They were just more of a regular style 5/8" grip; there was no egg shape, none of that stuff yet. When I made my first batch of tubes, I started taking them to the conventions, trying to see what kind of response I'd get. They were packaged in these handmade boxes... they looked like little bibles, and inside there were four tubes. Some were brass, some were stainless steel. It was just like a little limited edition thing.

So how did people react to them?

Well, they thought I was a fuckin' bible thumper at first. They tried to shoo me away from the booths. I don't usually show very many tattoos at the shows; I wear long sleeves and walk around pretty mild mannered. I wasn't a vendor there or anything... I'd just walk up to a booth and say, "Hey, I've got the good word in here for ya." Then they're all looking at this thing that looks like a little bible, and they're like, "Man, go talk to somebody else about your god stuff," and I'm all, "No, no, no, like, check it out." Then I'd open up the box, all lined with velvet and there's four tubes packaged in there real nice, and they'd be like, "Whoa, how much?"

I'd open up the box, all lined with velvet and there's four tubes packaged in there real nice, and they'd be like, "Whoa, how much?"

Were they expensive, compared to other tubes?

People think thirty-five bucks is a lot of money for a tube, but my tubes will last longer than six other tubes.

There are also important health issues that go along with tubes and tube cleaning. Do you think that the three piece tube should be outlawed in tattooing?

I call them five piece tubes; the screws are pieces, they should be included in the parts count. I don't think they should be outlawed;

I started out the same way. I was taught to use the ultrasonic cleaner, scrub my tubes, package them, autoclave them and repeat. When I did this, sometimes one or two setups would come out of the autoclave with blue or green or grey in the bag, so I started to take my setups completely apart after every job. Man, that was a lot of work. After talking to numerous artists, I asked myself, "Am I the only one doing this?" I've watched tattoo artists set up at shows or at their shops; they're putting barrier film on everything, they're wearing hospital masks and bibs. They are one step shy of a hazmat suit, but they have never taken their tubes apart to sterilize them. It doesn't make sense. People will reply by saying, "I've been tattooing forever and I haven't had any complaints or problems yet." To me it's not a matter of if it will happen; it's a matter of *when* it will happen. A tattoo tube must be completely disassembled at all joining pieces. Each piece must be thoroughly cleaned, packaged and then autoclaved. If you don't break down your tubes every time to clean them, a bio film can develop in all cracks and joining pieces over time. A bio film is a microscopic membrane that acts like a shield and can protect residual bacteria, ink, dead skin cells and proteins. You can't see it. You can sterilize the surface of a bio film, but this membrane is very fragile and easily disrupted during the next use of the tube, or even while you are setting up. That disruption will lead to exposure to anything that was under the surface of the bio film. Microtest Laboratory helped me to understand and explained what can happen if things are not sterilized properly. Dr. Deborah Ensing did the testing for me. Here is the actual email in response to the subject:

I've watched tattoo artists set up... they're putting barrier film on everything, they're wearing hospital masks and bibs. They are one step shy of a hazmat suit, but they have never taken their tubes apart to sterilize them.

Subject: Info on cleaning before sterilization
Date: Thu, 1 Apr 2004 16:34:56 -0500

Andy,

We have a document by the Association for the Advancement of Medical Instrumentation, called (AAMI TIR no. 12) 1995, "Designing, Testing, and Labeling Reusable Devices for Reprocessing in Health Care Facilities: A Guide for Device Manufacturers". We refer to it when we do any sort of cleaning and disinfecting/sterilization studies. It essentially comes down to this... adequate cleaning of reusable medical devices is required to assure that sterility can be attained without compromising functionality.

Even dead bacteria can cause problems in people, like fever or cellular reactions. In fact, our lab routinely tests for exactly those agents in so-called "sterile" product.

From Chapter 4 Decontamination: "Thorough cleaning and rinsing are the first and most important steps in the reprocessing of any reusable medical device. Without thorough cleaning and rinsing, it might not be possible to achieve high level disinfection or sterilization of the device. The purpose of cleaning and rinsing is to remove all adherent visible soil (e.g., blood, protein), to reduce the number of particulates and micro-organisms, and to reduce the amount of pyrogenic and antigenic material. Any organic material or residual cleaning agents remaining on the device can inactivate liquid chemical disinfectants/sterilants as well as protect micro-organisms from destruction."

Deborah Ensign, B.A., RM (NRM)
Senior R&D Microbiologist
www.microtestlabs.com

The thing about sterilization is that the entire part has to be physically clean before it can be sterilized. That means all the surfaces of each part – even the surfaces between the tube tip, tube stem and tube grip – must be cleaned before they can be sterilized. Ultimately, it's a matter of ethics. Doing the best job you can is really something that everyone should strive for; it's just part of the job.

There's a lot to it that's simply common sense. Some people just want to take a short cut or two. Most industry tubes are stainless steel, but a very low grade. We only use surgical grade steel for all of our tubes. We carry three sizes of round liners and five sizes of magnum tubes, all machined out of one solid rod, eliminating all joining pieces and making them easier to clean. This reduces the likelihood of creating any place for ink, blood, etc. to hide. Tip sizes on our round tubes range from a type three liner up to a thirty-three round shader.

Right: CNC iron frame;
Sprocket frame, left side view;
Sprocket frame, right side view

Our magnums are five sizes; seven mag, eleven mag, seventeen mag, twenty-seven mag and forty-nine mag. The tips on our tubes are twice as thick as standard tube tips. If someone is having trouble getting up to the edge of their line work using our tubes, it's because they are used to the thinner wall of a standard grade tube. Our tips are thicker, so the first time you use them you might have to slow down a bit to get acquainted. We use an electro-polish finish on all our tubes. Electro-polishing is a process where they use electricity in a chemical bath to pull all unnecessary minerals, like nickel, out and away from the part. This is what gives them their bright, shiny look and super fast clean up. There are a lot of tubes now that look like ours, with big fat knurling and similar shapes, but they are still five piece tubes and the quality just isn't there. A one piece tube is much easier to take care of and to clean. I don't know how long I will make tubes, I guess as long as people want them. They are guaranteed for life; at least as long as mine. Our tubes will last through your career. Remember, you must wear the tube out by tattooing, not by abusing it or running over it with your client's monster truck. If you think that you can wear through one of my tips by tattooing, just send the worn out tube back, cover the shipping, and I'll send you a new one. I have tubes that are going on year eight and those tips are fine. Minimal grooves are showing, but not even close to replacement.

Every year tubes and grips seem to get bigger. Is it a weight distribution thing, like trying to balance the weight of the machine? Or is it more of an ergonomics thing, how it feels in the hand? Or is it that tubes and grips got really big because the tips got really big?

This is my analysis. Some people have problems with weight as far as hand fatigue, so they'll get these big nylon grips, and sometimes they'll even put a grip cover or something over them to make them even bigger. It seems a little bit more comfortable in the hand 'cause I guess you're not squeezing as hard.

I suppose, if it's made of a lightweight material; they must be looking for the size of the thing, not the weight. Some guys have told me that they think the weight sort of counter-balances the weight of the machine, making it easier to hold.

When I made those really big tubes, I didn't think about how much a 1 1/2" diameter grip would weigh; but I saw these guys using a 1" and then wrapping hose around it, so I said let's just make a bigger grip. I made a small run of them and they were so heavy that I thought no one was going to want to use them, but when you put a machine on the back you didn't feel it.

There are tattoo artists out there who don't make any sense. There are some who will use an outliner until it starts cracking and buzzing, and then they throw it in a box and buy a new one.

Because all the weight's in your hand. So maybe weight distribution is the more significant factor.

I don't know, honestly. I just wanted to make some big grips and try them. When I use a small grip, like a 5/8", I notice that my hand gets a little tired after a four hour tattoo, compared to using my usual 1" or 1.5" grip.

Do you think your hand gets tired because of the small size or because the tube doesn't weigh enough?

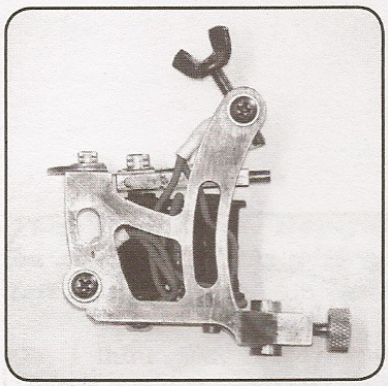
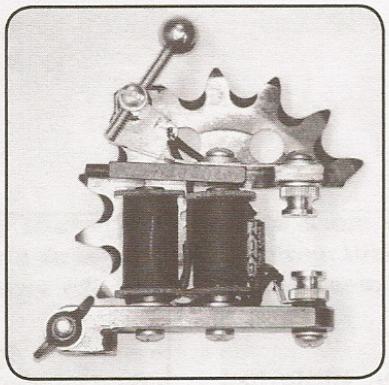
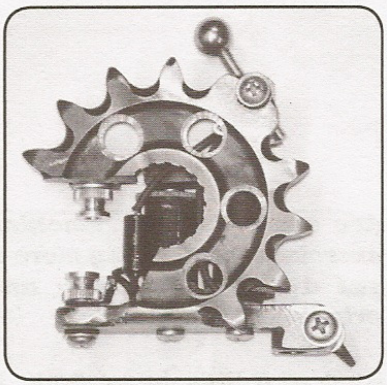
I think it's the pinching.

The size...

It's not the weight.

So probably the ergonomic factor is more critical.

I think so, but some people can't tattoo with something heavy. They just don't feel comfortable with it. There are tattoo artists out there who don't make any sense. There are

some who will use an outliner until it starts cracking and buzzing, and then they throw it in a box and buy a new one. That doesn't make sense; if you can't fix it, find one of your friends that can and try to learn a little bit.

What was the first good running machine that you had?

My first tattoo machines were Nationals. I had one Precision Swing Gate and one Eagle Shader. I bought them from National in 1993. In 1995, I bought a Micky Sharpz Brass Hybrid from R.J. at Tabu Tattoo. It didn't really run better than my Nationals. Those Nationals were tweaked out and tuned up by a close friend, Steve Smith.

When you made your first frames did you try to copy the geometry or the set-up from another machine?

When I made that first batch of frames, I didn't have a good time of it. They were inspired by Ron Ackers. I tried to make an adjustable rear spring deck that would move up and down so that you could use short or standard sized coils in the frame. That didn't turn out good; it just wouldn't seat right. It was hard to get that rear spring mount flat. The whole project was eyeballed. When I made my next frame, I took the geometry from a Micky Sharpz copy of a Paul Rogers machine. The frames and armature bars were all iron, made on a CNC machine. I made about 19 frames total. I was still getting all of my parts, like coils and binding posts, from other suppliers. I was soldering in capacitors, cutting the springs and tuning them up. They ran pretty good and I would sell a few at conventions. People would ask if I wound the coils myself, and I would tell them, "No, not yet." I felt a bit let down and told myself that I wouldn't make any more machines until I learned how to wind coils. I made those frames in late 1999. Now I get a machine shop to make all of the frame bases for my machines, as well as the binding posts and armature bars. When I make a frame now, it's done on a jig. A couple of friends of mine, Chris and Gary, help with the welding. It's a lot quicker and less clean up. Before any of this happens, I use the old Wind-O-Matic 2000 and wind up the coils for a few machines. I'm using 24 gauge wire, with seven to ten wraps on a 1 1/4" tall, 3/8" diameter iron core. The Wind-O-Matic can make a set of coils in about two minutes. It's an old sewing machine motor that I clamp in a vise; my feet and hands do the rest. Usually the guys around the shop, Jason or Nick, will help me wind these puppies up. As far as frames go, I do a bent frame with one upright between the coils. I've been on this sprocket kick for a while now; sometimes it's just a plasma-cut piece of steel, usually a random shape. Every now and then I get my hands on some broken tools or something cool to use. Sometimes, after cutting up a few sprockets, there is some left over scrap. If possible, I'll use those pieces to make a few left over irons. I have two basic styles of sprockets: one is full size, and one is cut up to make them smaller. They are all the same but different; some have holes, some don't. The amount of frames made in a particular style will usually determine the cost of the machine. I build a few machines a month, not many. I usually don't make more than a baker's dozen of one particular style, but that could change. Sometimes there is a shape that just looks good.

I felt a bit let down and told myself that I wouldn't make any more machines until I learned how to wind coils.

Are some of these machines more style exercises, or are they more about working out different geometry and mechanical principles?

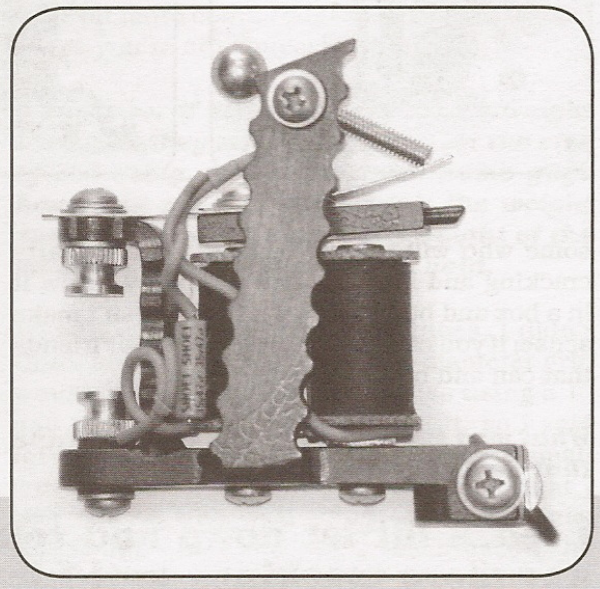
Kind of a little bit of both. Lyle Tuttle had shown me pictures of people making stuff out of bent up metal and really just trying to expand the options of how to make a machine and make it functional. I was really inspired by that, so when I started making pre-fabs they were not just a pre-fab, they were also kind of a bent frame. Kind of two styles in one, two theories in one. Shape has to be some of it; I mean, even if it's ugly it can still look cool. I'm not trying to make the perfect machine, 'cause there'll never be one; I'm just trying out a few things, having fun with it. To me it's a hobby, really.

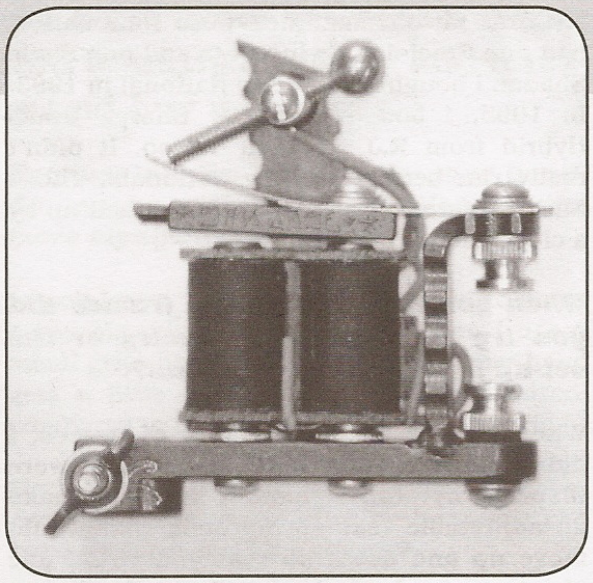
Putting on tattoos is really what you do.

I tattoo, but I love to build machines. Tattooing has totally engulfed me; the machine-smithing is just part of the same thing.

It's an extension of putting that tattoo on, because you're using a machine that you built. The chain of events that make up doing a tattoo goes back to the machine; in your case, you made that machine, and further back you made the armature bar and the coils that are on it. You've got your hand in it all. That's rare in this day and age.

Even for the people who don't make their own stuff, if they get a kit and assemble it, and tune it up and it's workin' fine, and they're pumping in that ink... that's cool too; it's still an extension of them. Steve Smith really helped me a lot. For the last ten years I've watched him work on his machines. Even if he's working on a big piece, if something starts crackling and buzzing, he'll just throw it down, take off the gloves, disassemble it real quick, tweak it out, do what he needs to do, throw it back together and it's fine. That's almost a lost art or a lost skill. Artists will just use a machine and not know how to maintain it, but they're apprenticing someone... how are they going to teach them how to fix their machines?





Above: Common bent-style frame by Andy Johnson, right and left side views.

They just don't. Hopefully there will be enough people with some integrity left in tattooing to pull things along.

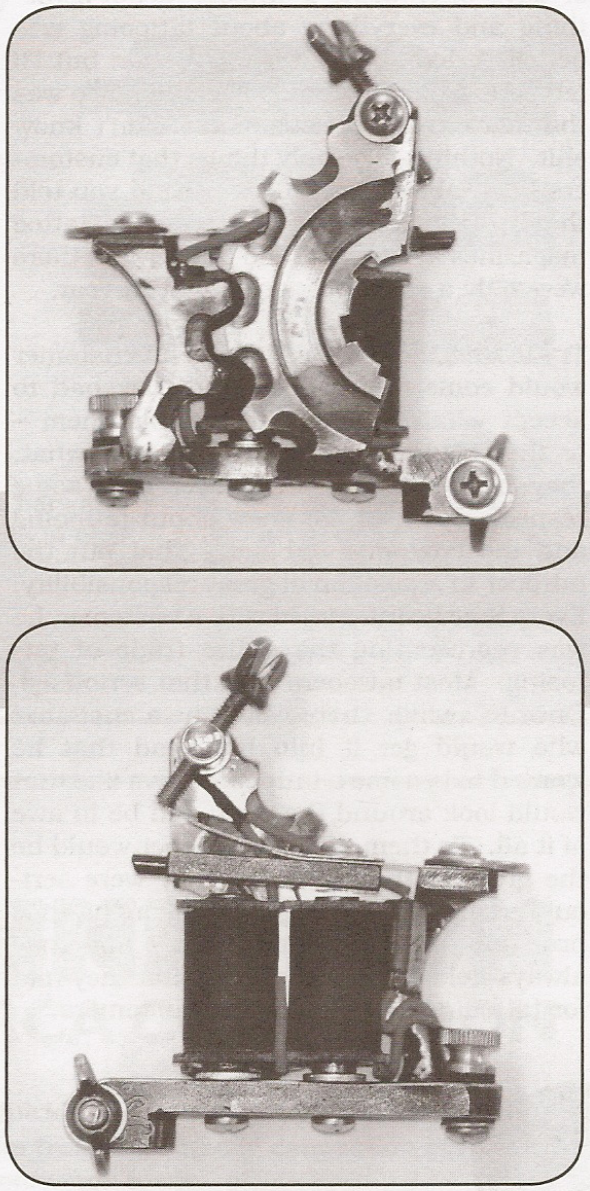
Oh, I think that there's enough out there. There's a whole new wave of tattooing coming in, with artists coming up so fast, doing beautiful work after only four years. It's all about who you learn from. The ones that get into it full-bore and want to push the industry forward are the ones who are going to stay. The people who aren't here to stay and won't make it are obvious. They're the ones who are out there selling toys and bongs and rave gear and candy and kooky novelty stuff and whatever they need to get tattoo customers into their shop. It's obvious that it's not the quality of their work that's bringing customers into their shop; it's the skateboard decks, rave hats and glow sticks. Those are the people who are going to fade out.

There's different kinds of customers for different kinds of shops.

The public doesn't know any better. They figure they just want a tattoo. There's nothing wrong with being spontaneous – that's part of tattooing – but the focus of a tattoo shop should be the artwork, not the atmosphere.

Most tattoo artists have never wanted their customers to know too much. I think that stems from believing that if customers know too much, they're going to try to start tattooing. It has always been a problem.

A lot of people have wanted to try and learn to tattoo and they might be beautiful artists, they can paint, they can draw – but when it really comes to laying it in and putting that line in crisp and confident, it don't always happen. Some people it happens for, some people it doesn't. You gotta really be serious to succeed in this. MGM



Above: Custom frame by Andy Johnson, right and left side views.

TATTOOING, WHAT HAPPENED?

by Bill Baker

Tattooers love to tell tales about the good ol' days when being a tattooer meant something and everything about tattooing was better. I don't know if it was better; but I'll tell you, it was different. The difference was that back then, the customers didn't know shit. Nothing. The only things that customers knew about tattooing was what you told them. Before 1983, there were no tattoo magazines available to the public, and there were only a couple of conventions a year.

Try to imagine what it was like. A customer would come into a shop and they had to accept whatever the tattooer told them – or they could just leave. No matter what, they had to treat the tattooer with some respect. After all, he knew about tattooing and the customer did not. That put the tattooer in a position of great responsibility. Every time he interacted with a customer, he was representing the entire trade of tattooing. Most tattooers took that seriously. Once in awhile, there would be a customer who would get it into his head that he wanted to become a tattooer. Guys like that would look around the shop and be in awe of it all. To them, being a tattooer would be the greatest thing ever. If they were serious enough and tried hard enough, they probably did become tattooers – and they always held on to the respect that they had for tattooing when they were customers.

Now most customers don't have respect for most tattoo artists – but that's the tattoo artist's own fault. Customers look around a shop and look at their tattoo artist and say, "I could do this." And you know what? They could. Many tattoo artists are not doing a good enough job of being tattoo artists. If your customer doesn't realize that there are specific skills required to be a tattooer, then you are letting the entire trade down.

At this point, we're three generations deep into tattooers who don't respect tattooing – just like they didn't respect tattooing when they were customers. You cannot blame the magazines and conventions. There are always going to be some unscrupulous people eager to take a little money from those who desperately want to start tattooing. Let's face it - nobody ever wanted to start tattooing because they saw a tattoo magazine or went to a convention. People get the idea that they want to start tattooing by looking at the guy who tattooed them.

People are always going to want to tattoo. The first step to stopping loser customers from becoming loser tattooers is to force them to treat tattooing with respect while they are in your shop. Some of that respect might even rub off on you. MGM

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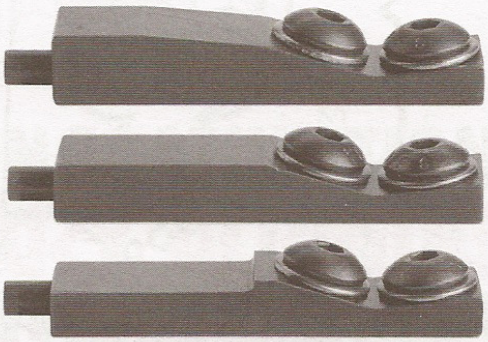

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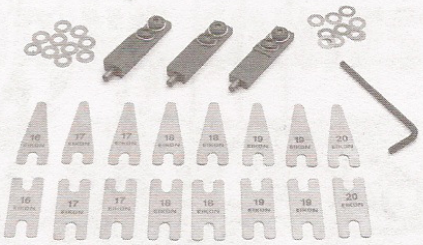

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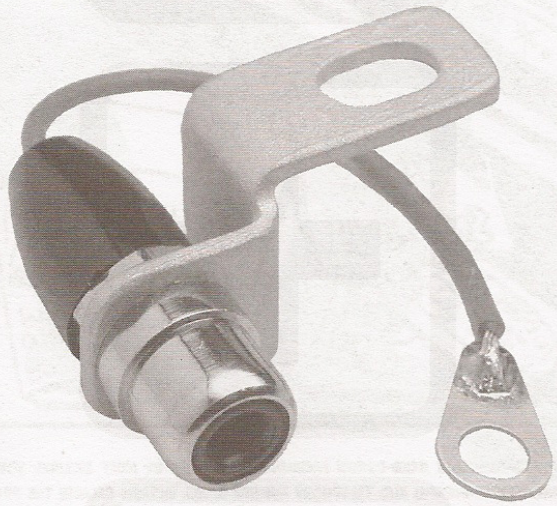

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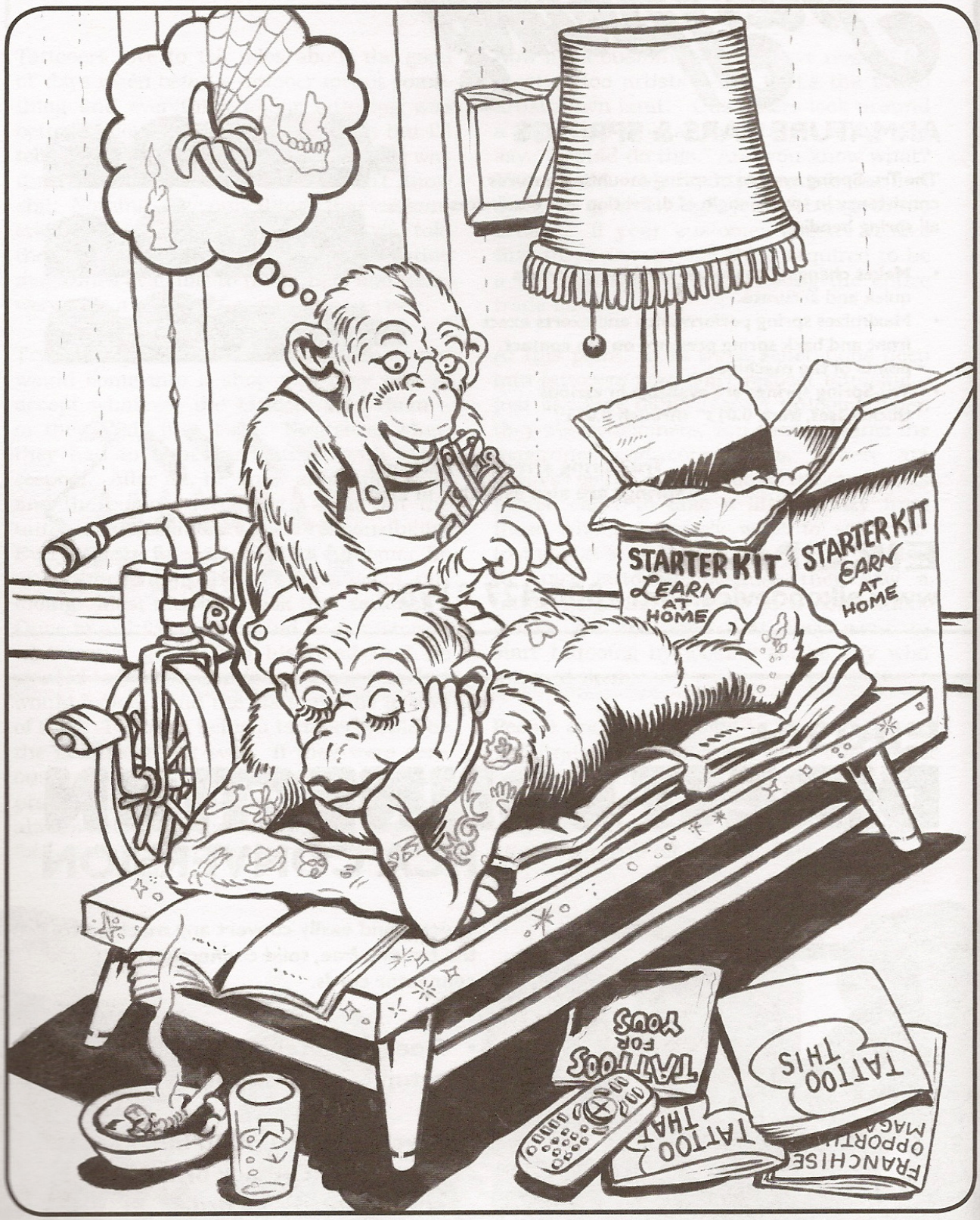

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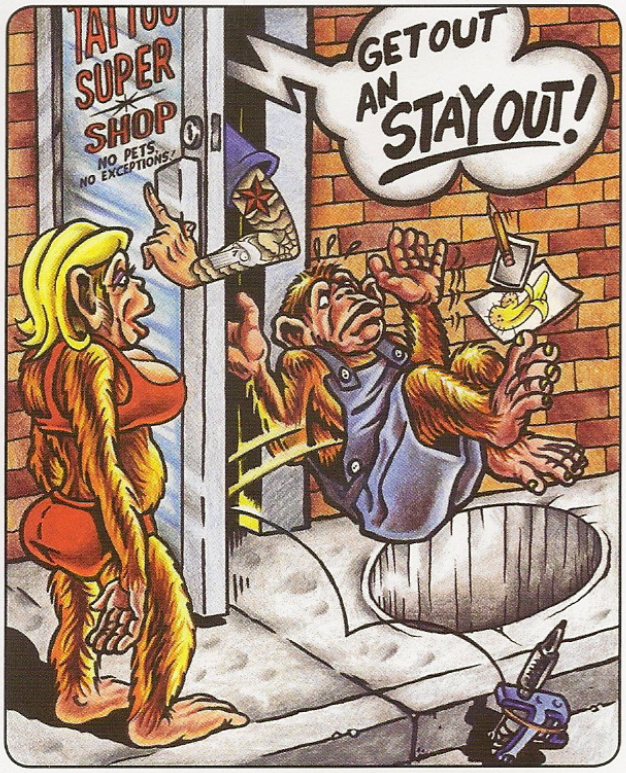

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